ILLINOIS STATE MEDICAL SOCIETY
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TRANSACTIONS

OF THE

FORTY-THIRD ANNUAL MEETING

OF THE

ILLINOIS STATE MEDICAL SOCIETY

HELD IN

CHICAGO, MAY 16, 17 AND 18, 1893

CHICAGO:
P. F. PETTIBONE & CO., 48 AND 50 JACKSON STREET
1893

THE

FORTY-FOURTH ANNUAL MEETING

WILL BE HELD IN

DECATUR, MAY 15, 16 AND 17,

1894.

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OFFICERS, COMMITTEES AND LIST OF MEMBERS

For the Year 1893-94.

OFFICERS.

PRESIDENT.

OTHO B. WILL, Peoria.

FIRST VICE-PRESIDENT.

DANIEL R. BROWER, Chicago.

SECOND VICE-PRESIDENT.

ABBY FOX ROONEY, Quincy.

PERMANENT SECRETARY.

JOHN B. HAMILTON, Chicago.

ASSISTANT SECRETARY.

E. J. BROWN, Decatur.

TREASURER.

GEORGE N. KREIDER, Springfield.

JUDICIAL COUNCIL.

CHARLES C. HUNT, Dixon.
RICHARD DEWEY, Kankakee.
ISAAC N. DANFORTH, Chicago.
JOHN P. MATTHEWS, Carlinville.
FRANCIS P. HALLER, Vandalia.
EDGAR P. COOK, Mendota.
E. INGALS, Chicago.
C. B. JOHNSON, Champaign.
W. J. CHENOWETH, Decatur.

SECTIONS.

Practice of Medicine, Medical Specialties, Materia Medica, Therapeutics.

Chairman—T. J. PITNER, Jacksonville.
Secretary—H. MCKENNAN, Paris.

Surgery, Surgical Specialties and Obstetrics.

Chairman—D. W. GRAHAM, Chicago.
Secretary—ELLEN H. HEISE, Canton.

Etiology, State Medicine and Medical Jurisprudence.

Chairman—GEO. W. WEBSTER, Chicago.
Secretary—G. A. ZELLER, Peoria.

COMMITTEES.

Executive Committee.
(*Ex-Officio*).

OTHO B. WILL, Peoria.
JOHN B. HAMILTON, Chicago.
C. C. CHENOWETH, Decatur.
T. J. PITNER, Jacksonville.
D. W. GRAHAM, Chicago.
GEORGE W. WEBSTER, Chicago.

Committee of Arrangements.

C. CHENOWETH.
H. C. JONES.
WM. BARNES.
E. J. BROWN.
WILLIAM M. CATTO.

Committee on Publication.
(*Ex-Officio*).

JOHN B. HAMILTON, Chicago.
OTHO B. WILL, Peoria.
GEO. N. KREIDER, Springfield.

Committee on Medical Legislation.

A. B. STRONG, Chicago.
B. M. GRIFFITH, Springfield.
WALTER WATSON, Mt. Vernon.
The President (*Ex-Officio*).

Committee on Necrology and Biography.

JOHN H. HOLLISTER, Chicago.
ROBERT BOAL, Peoria.
JOHN H. RAUCH, Chicago.

Committee on Medical Societies.

WILLIAM O. ENSIGN, Rutland.
JAMES L. REAT, Tuscola.
CHARLES W. HALL, Kewanee.

Committee on Registration.
(*Ex-Officio*).

GEO. N. KREIDER.
E. J. BROWN.

LIST OF OFFICERS AND PLACES OF MEETING SINCE THE ORGANIZATION OF THE SOCIETY.

YR.	PRESIDENT.	VICE-PRESIDENT.	SECRETARY.	TREASURER.	PLACE OF MEETING.
1850*	Rudolphus Rouse..	.....	Edwin G. Meek	.....	Springfield.
1850	William B. Herrick	Rudolphus Rouse.	Edwin G. Meek	John A. Halderman.	Springfield.
1851	Samuel Thompson.	E. McArthur.....	H. Schoemaker	R. Rouse.....	Peoria.
1852	Rudolphus Rouse..	Thomas Hall.....	E. S. Cooper ...	Edward Dickenson.	Jacksonville.
1853	Daniel Brainard...	C. N. Andrews....	H. A. Johnson..	A. B. Chambers	Chicago.
1854	C. N. Andrews.....	Samuel Thompson	H. A. Johnson..	N. S. Davis	La Salle.
1855	N. S. Davis	E. R. Roe	E. Andrews....	J. V. Z. Blaney	Bloomington.
1856	H. Noble.....	T. D. Washburn..	N. S. Davis	J. V. Z. Blaney.....	Vandalia.
1857	C. Goodbrake.....	A. L. McArthur...	H. A. Johnson..	J. V. Z. Blaney.....	Chicago.
1858	H. A. Johnson	Wm. Lyman.....	N. S. Davis	J. W. Freer.....	Rockford.
1859	David Prince.....	H. W. Davis	N. S. Davis	J. W. Freer.....	Decatur.
1860	Wm. M. Chambers.	T. K. Edmiston...	N. S. Davis	J. W. Freer.....	Paris.
1863	A. McFarland	A. H. Luce.....	N. S. Davis	J. H. Hollister	Jacksonville.
1864	A. H. Luce.....	J. M. Steele	N. S. Davis	J. H. Hollister	Chicago.
1865	J. M. Steele..	F. B. Haller	N. S. Davis	J. H. Hollister	Bloomington.
1866	F. H. Haller	L. T. Hewens.....	N. S. Davis	J. H. Hollister	Decatur.
1867	S. W. Noble	D. W. Young	N. S. Davis	J. H. Hollister	Springfield.
1868	S. T. Trowbridge..	J. O. Hamilton....	N. S. Davis	J. H. Hollister	Quincy.
1869	S. T. Trowbridge..	J. O. Hamilton....	N. S. Davis	J. H. Hollister	Chicago.
1870	J. V. Z. Blaney	G. W. Albin.....	T. D. Fitch	J. H. Hollister	Dixon.
1871	G. W. Albin.....	John Murphy	T. D. Fitch ...	J. H. Hollister	Peoria.
1872	J. O. Hamilton.....	T. Worrell.....	T. D. Fitch	J. H. Hollister	Rock Island.
1873	D. W. Young	T. D. Washburn ..	T. D. Fitch	J. H. Hollister	Bloomington.
1874	T. F. Worrell	E. L. Holmes	T. D. Fitch	J. H. Hollister	Chicago.
1875	J. H. Hollister.....	Wm. P. Pierce....	T. D. Fitch ...	Wm. E. Quine.....	Jacksonville.
1876	T. D. Washburn ...	J. L. White	T. D. Fitch	J. H. Hollister	Urbana.
1877	T. D. Fitch	S. H. Birney	N. S. Davis	J. H. Hollister	Chicago.
1878	J. L. White.....	E. P. Cook	N. S. Davis	J. H. Hollister	Springfield.
1879	E. P. Cook	J. S. Whitmire. ..	N. S. Davis	J. H. Hollister	Lincoln.
1880	Ephraim Ingals ...	G. W. Jones.....	N. S. Davis	J. H. Hollister	Belleville.
1881	G. W. Jones	Wm. Hill	S. J. Jones.....	J. H. Hollister	Chicago.
1882	Robert Boal	A. T. Darrah.....	S. J. Jones.....	J. H. Hollister	Quincy.
1883	A. T. Darrah.....	L. G. Thompson ..	S. J. Jones.....	J. H. Hollister	Peoria.
1884	E. Andrews.....	D. S. Booth	S. J. Jones.....	Walter Hay.....	Chicago.
1885	D. S. Booth	S. C. Plummer....	S. J. Jones.....	Walter Hay.....	Springfield.
1886	William A. Byrd ..	W. T. Kirk.....	S. J. Jones.....	Walter Hay.....	Bloomington.
1887	William T. Kirk...	Elias Wenger.....	D. W. Graham.	Walter Hay.....	Chicago.
1888	Wm. O. Ensign....	C. W. Earle.....	D. W. Graham.	Walter Hay.....	Rock Island.
1889	C. W. Earle.....	P. H. Oyler	D. W. Graham.	T. W. McIlvaine....	Jacksonville.
1890	John Wright.....	J. P. Mathews	D. W. Graham.	T. W. McIlvaine....	Chicago.
1891	John P. Matthews.	Charles C. Hunt ..	D. W. Graham.	George N. Kreider..	Springfield.
1892	Charles C. Hunt ..	E. Fletcher Ingals	D. W. Graham.	George N. Kreider..	Vandalia.
1893	E. Fletcher Ingals.	Otho B. Will.....	D. W. Graham.	George N. Kreider..	Chicago.

* Preliminary "Convention."

EXPLANATORY.—No meeting was held in the year 1861 or 1862, "on account of the large number of members engaged as surgeons in the volunteer army of the United States."

Until the meeting of 1869 it was the custom to elect officers the first day, and for the President to have charge of the meeting at which he was elected. Hence Dr. Trowbridge seems to have presided over two meetings, although elected President but once.

LIST OF MEMBERS.

Roman indicates those who have paid their dues for the current year.

SMALL CAPITALS those who have complied with the following resolution, adopted May 19, 1881:

RESOLVED, That when any member of this Society shall have paid his annual dues for fifteen consecutive years, he shall thereafter be deemed a *life member*, and his name shall not be dropped for non-payment of dues; *but he shall only be entitled to the annual transactions for the years for which he has paid the annual dues.*

* Life members who have paid dues for the current year.

** Those exempt by special vote of the Society.

Italics those who are delinquent one or more years.

NAME.	POSTOFFICE.	COUNTY.
Abbott, W. C	Ravenswood	Cook.
Adams, A. L	Jacksonville	Morgan.
Alderson, E. M	Chicago	Cook.
Aldrich, D. W	Galesburg	Knox.
Allison, J. W	Kankakee	Kankakee.
ANDREWS, EDMUND	Chicago	Cook.
Andrews, E. Wyllys	Chicago	Cook.
Andrews, Wells	Chicago	Cook.
Angear, J. J. M	Chicago	Cook.
Anderson, S. T	Bloomington	McLean.
Angle, E. J	Chicago	Cook.
Anthony, Frank	Sterling	Whiteside.
Babcock, Elmer E	Chicago	Cook.
Babcock, R. H	Chicago	Cook.
Bacon, J. B	Chicago	Cook.
Bane, W. H	Springfield	Sangamon.
Barlow, C	Eaton	Crawford.
Barnes, A. T	Bloomington	McLean.
Barnes, Wm	Decatur	Macon.
Barth, Geo. E	Rock Island	Rock Island.
Bartlett, A. T	Virden	Macoupin.
Bartlett, E. P	Springfield	Sangamon.

NAME.	POSTOFFICE.	COUNTY.
Bartlett, John	Chicago	Cook.
Barton, P. H.	Danville	Vermillion.
Baughman, J. A	Neoga	Cumberland.
Baxter, A. J.	Astoria	Fulton.
Beck, Carl	Chicago	Cook.
Bell, Finis E.	Mattoon	Coles.
Benson, N. J	Anna	Union.
Bernhardi, Carl	Rock Island	Rock Island.
Best, John E	Arlington Heights	Cook.
Bettman, B	Chicago	Cook.
Billings, Frank	Chicago	Cook.
Binkley, J. T.	Chicago	Cook.
Bird, A. M	Mason City	Mason.
Bishop, Rufus W	Chicago	Cook.
Bishop, S. S	Chicago	Cook.
Black, C. E	Jacksonville	Morgan.
Black, J. N.	Clayton	Adams.
Blaine, John E	Dwight	Livingston.
Blanchard, Wallace	Chicago	Cook.
Boal, Robert	Peoria	Peoria.
Bogue, R. G	Chicago	Cook.
Bolt, Geo. S	Herrick	Shelby.
Borland, L. C	Chicago	Cook.
Bouffleur, A. I	Chicago	Cook.
Bowman, L. M.	Scottville	Macoupin.
Braffet, J. H	Paw Paw	Lee.
Brayton, Sarah H	Evanston	Cook.
Braunworth, Anna M	Monmouth	Warren.
Breckenridge, S. T.	Riverside	Cook.
Bremmer, H. A	Merritt	Scott.
Bridge, N.	Los Angeles, California.	
Brill, J. A	Chicago	Cook.
Brower, D. R	Chicago	Cook.
Brittin, A. L	Athens	Menard.
Brooks, H. J	Elgin	Kane.
Brown, C. B	Sycamore	De Kalb.
Brown, E. J	Decatur	Macon.
Brown, Harry	Chicago	Cook.
Brown, H. B	Lincoln	Logan.
Brown, J. L	Peoria	Peoria.
Brown, Moreau R	Chicago	Cook.
Brown, Reuben W	Sheridan	Cook.

NAME.	POSTOFFICE.	COUNTY.
Brown, Sanger	Chicago	Cook.
Bruner, J. M. O	Port Byron	Rock Island.
Buck, H. B	Springfield	Sangamon.
Bumstead, J. E	Dundee	Kane.
Burke, Charles O	Atlanta	Logan.
Burnham, A. F	Ashland	Cass.
Burrows, Chas. M	Chicago	Cook.
Burry, James	Chicago	Cook.
Byford, H. T	Chicago	Cook.
Byrne, John H	Chicago	Cook.
Caldwell, W. S	Freeport	Stephenson.
Campbell, J. Y	Paxton	Ford.
Carter, J. M. G	Waukegan	Lake.
Casburn, R. L	Carthage	Hancock.
Casselberry, W. E	Chicago,	Cook.
Catto, W. M	Decatur	Macon.
Chamberlin, G. M	Chicago	Cook.
Chapman, H. W	Whitehall	Greene.
Chapin, S. N	Chicago	Cook.
Chenoweth, C	Decatur	Macon.
Chenoweth, W. J	Decatur	Macon.
Chewning, J	Wenona	Marshall.
Chowning, J. P	Millersburg	Mercer.
Christopher, Walter S	Chicago	Cook.
Church, N. H	Chicago	Cook.
Clark, Sumner	Effingham	Effingham.
Clark, W. E	Chicago	Cook.
Cleveland, E. F	Dundee	Kane.
Cole, W. C	Jacksonville	Morgan.
Coleman, W. F	Chicago	Cook.
Colburn, J. E	Chicago	Cook.
Collins, J. S	Chesterfield	Macoupin.
Colt, J. D	Litchfield	Montgomery.
Conibear, W. H	Morton	Tazewell.
Conner, J. J	Pana	Christian.
Cook, E. P	Mendota	La Salle.
Cook, Wm. H	Coffeen	Montgomery.
Cooper, C. C	Havana	Mason.
Cory, A. L	Chicago	Cook.
Corr, A. C	Carlinville	Macoupin.
Corr, L. H	Carlinville	Macoupin.

NAME.	POSTOFFICE.	COUNTY.
Cotton, A. C.	Chicago	Cook.
Coulter, J. H.	Chicago	Cook.
Cowan, G. R.	Girard	Macoupin.
Cox, W. M.	Mt. Sterling	Boone.
Cozad, James	Reynolds	Rock Island.
Craig, G. G.	Rock Island	Rock Island.
Crane, W. W.	Sinclair	Morgan.
Crawford, Napoleon B.	Eureka	Woodford.
Crow, J. T.	Carrollton	Greene.
Culbertson, S. D.	Piper City	Ford.
Cullimore, T. M.	Jacksonville	Morgan.
Curtis, Lester	Chicago	Cook.
Curtis, R. M.	Union	McHenry.
Cushing, Henry E.	Champaign	Champaign.
Dalton, W. B.	Scottville	Macoupin.
Danforth, I. N.	Chicago	Cook.
Davidson, T. W.	Oneida	Knox.
Davis, C. E.	Peoria	Peoria.
Davis, N. S.*	Chicago	Cook.
Davis, N. S., Jr.	Chicago	Cook.
Davis, T. A.	Chicago	Cook.
Davison, J. B.	Moline	Rock Island.
Day, W. C.	Winchester	Scott.
Deal, J.	Riverton	Sangamon.
De Graff, E. B.	Littleton	Schuyler.
Detwiler, E. S.	La Grange	Cook.
De Veny, L. C.	Chicago	Cook.
Dewey, R.	Chicago	Cook.
DeWitt, R. R.	Hampshire	Kane.
Dick, John K.	Kankakee	Kankakee.
Dickinson, Frances	Chicago	Cook.
Dicus, J. F.	Streator	La Salle.
Dieffenbacher, P. L.	Havana	Mason.
Dinsmore, Virginia	Jacksonville	Morgan.
Doering, E. J.	Chicago	Cook.
Doolittle, Wm. H.	Woodstock	McHenry.
Dougall, Wm.	Joliet	Will.
Dougherty, Patrick	Chicago	Cook.
Douglas, D. T.	Colfax	McLean.
Drew, A. M.	Weldon	De Witt.
Du Hadway, C.	Jerseyville	Jersey.

NAME.	POSTOFFICE.	COUNTY.
Dudley, E. C.	Chicago	Cook.
Dyas, G. K.	Chicago	Cook.
Dyer, R. F.	Ottawa	La Salle.
Earle, C. W.	Chicago	Cook.
Earle, F. B.	Chicago	Cook.
Easley, Wm. T.	Greenville	Bond.
Eddy, W. J.	Shelbyville	Shelby.
Elder, Wm. A.	Bloomington	McLean.
Eldridge, F. P.	Greenview	Menard.
Elrod, E. B.	Cairo	Alexander.
Engert, Rosa H.	Chicago	Cook.
ENSIGN, W. O.	Rutland	La Salle.
Etheridge, J. H.	Chicago	Cook.
Evans, C. W.	Chicago	Cook.
Evans, J. W.	Varna	Marshall.
Evatt, William	Chicago	Cook.
Fenger, C.	Chicago	Cook.
Ferguson, S. T.	Joliet	Will.
Fernold, W. J.	Rantoul	Champaign.
Fiegenbaum, E. W.	Edwardsville	Madison.
FINK, I. W.	Hillsboro	Montgomery.
Firebaugh, I. L.	Robinson	Crawford.
Fish, W. H.	Baylis	Pike.
Fisher, J. C.	Petersburg	Menard.
Fiske, Geo. F.	Chicago	Cook.
FITCH, T. D.	Chicago	Cook.
Fitch, W. H.	Rockford	Winnebago.
Fitts, A. A.	Batavia	Kane.
Fletcher, Jos.	Mendon	Adams.
Foote, D. E.	Belvidere	Boone.
Foster, A. H.	Chicago	Cook.
Frank, Jacob	Chicago	Cook.
Freeman, J. A.	Millington	Kendall.
Fringer, Geo. W.	Pana	Christian.
Frothingham, H. H.	Chicago	Cook.
Fyke, E. E.	Odin	Marion.
Gaffner, Theophilus	Trenton	Clinton.
Garrott, E.	Chicago	Cook.
Gates, William S.	Ravenswood	Cook.
Gavin, E. F.	Waukegan	Lake.

NAME.	POSTOFFICE.	COUNTY.
Geddy, W. H.	Ohlman	Montgomery.
Geer, F. H	Chicago	Cook.
German, W. H	Morgan Park	Cook.
Gardner, E. J.	Chicago	Cook.
Gilliland, W. E	Coatsburgh	Adams.
Gillis, F. P	Chester	Randolph.
Given, E. F	Waukegan	Lake.
Gilson, Geo. H.	Shipman	Macoupin.
Goble, E. T	Earlville	La Salle.
Goodell, W. L	Effingham	Effingham.
Goldsphon, A	Chicago	Cook.
Gordon, James	Greenville	Bond.
Gordon, John H	Pocahontas	Bond.
Gordon, W. W	Carlyle	Clinton.
Gradle, H	Chicago	Cook.
Graham, D. W	Chicago	Cook.
Graves, B. C	Cisco	Piatt.
Graves, E. H.	Bement	Piatt.
Gray, G. C	Glenarm	Sangamon.
Green, J. W	Marengo	McHenry.
Gregory, L. E	Chicago	Cook.
Griffith, B. M.	Springfield	Sangamon.
Griffith, B. B	Springfield	Sangamon.
Grim, A	Franklin Grove	Lee.
Guthrie, H. R	Sparta	Randolph.
Guthrie, W. E.	Bloomington	McLean.
Haerther, A. G	Chicago	Cook.
Hairgrove, J. W	Jacksonville	Morgan.
Halbert, W. A	Salisbury	Sangamon.
Hall, Randolph N	Chicago	Cook.
Hallam, J. L	Centralia	Marion.
Hallam, W. L	Bloomington	McLean.
HALLER, F. B	Vandalia	Fayette.
Hamil, Charles	Greenview	Menard.
Hamilton, J. B	Chicago	Cook.
Hammond, J. D	Chicago	Cook.
Hancock, J. L	Chicago	Cook.
Hard, Chester	Aurora	Kane.
Hardy, H. T	Kaneville	Kane.
Harlan, J. H	Fairfield	Wayne.
Harmison, D. C	Bath	Mason.

NAME.	POSTOFFICE.	COUNTY.
Harmon, J. C	Rantoul	Champaign.
Harris, B. H	Groveland	Tazewell.
Harris, M. L	Chicago	Cook.
Harrison H. M	Bushnell	McDonough.
Harsha, W. M	Chicago	Cook
Harvey, J. G.	Bluemound	Macon.
Harvey, L. J	Griggsville	Pike.
Haskell, W. A	Alton	Madison.
Haskin, H. S	Highland Park	Cook.
HATCH, H	Quincy	Adams.
Hatfield, C. L	Chicago	Cook.
Hayes, P. S	Chicago	Cook.
Haynes, Baxter	Hurricane	Montgomery.
Haynes, Moses	Vandalia	Fayette.
Hayward, Chas. E	Cropsey	McLean.
Heise, Ellen H	Canton	Fulton.
Hektoen, Ludwig	Chicago	Cook.
Hequernbourg, J. E	Chicago	Cook.
Herrick, J. B	Chicago	Cook.
HERRIOTT, E. L	Jacksonville	Morgan.
Hickman, T. G.	Vandalia	Fayette.
Hoadley, A. E	Chicago	Cook.
Hoffman, J. A	Pesotum	Champaign.
Holderness, E. P. G	Chenoa	McLean.
HOLLISTER, J. H	Chicago	Cook.
HOLMES, E. L	Chicago	Cook.
Holton, N	Harkers Corners	Peoria.
Hooper, H	Chicago	Cook.
Hoornbeck, N. B	Youngstown	Warren.
Hotz, F. C	Chicago	Cook.
Hosmer, A. B	Chicago	Cook.
Howland, E. D	Lockport	Will.
Huff, O. N	Chicago	Cook.
Huff, Wm. J	Findlay	Shelby.
Hughes, N. J	Franklin	Morgan.
Hull, M. D	Arrowsmith	McLean.
Humphrey, A. J	Lakewood	Cook.
HUNT, C. C	Dixon	Lee.
Hunter, Warren	Hampton	Rock Island.
HURLBUT, V. L	Chicago	Cook.
Hurst, S. T	Greenview	Menard.
Hutchins, Wm. A	Orangeville	Stephenson.
Hyde, J. N	Chicago	Cook.

NAME.	POSTOFFICE.	COUNTY.
INGALS, E.*	Chicago	Cook.
INGALS, E. F.*	Chicago	Cook.
Isham, Geo. S	Chicago	Cook.
ISHAM, R. N	Chicago	Cook.
Jaggard, W. W	Chicago	Cook.
James, A. C	Springfield	Sangamon.
JENKS, D. S	Plano	Kendall.
Jennings, C. A	Delavan	Tazewell.
Johnson, C. B	Champaign	Champaign.
Johnson, Claes W	Chicago	Cook.
JONES, G. W	Danville	Vermillion.
Jones, H. C	Decatur	Macon.
Jones, Josiah	Tallula	Menard.
JONES, S. J	Chicago	Cook.
Johnson, F. S	Chicago	Cook.
Judd, H	Galesburg	Knox.
Jump, D. W	Plainfield	Will.
Kauffman, J. S	Blue Island	Cook.
Keefer, John F	Sterling	Whiteside.
Kell, A. P	Olney	Richland.
Kelly, M. W	Joliet	Will.
Kellogg, A. H	Jacksonville	Morgan.
Kelso, E. L	Paxton	Ford.
Kelso, H. A	Paxton	Ford.
Kendall, H. W	Quincy	Adams.
Kennelley, John S	Easton	Mason.
Kerr, Chas	Springfield	Sangamon.
Kinkead, A. G	Scottville	Macoupin.
Kirby, W. H	Chestnut	Logan.
Knight, Mary C	Aurora	Kane.
Kossakowski, M. P	Chicago	Cook.
Kreider, George N	Springfield	Sangamon.
Kuh, Edwin J	Chicago	Cook.
Landis, B. F.	Tiskilwa	Bureau.
Leahy, M. M.	Chicago	Cook.
Ledlie, J. H	Pittsfield	Pike.
Lee, E. W	Chicago	Cook.
Lee, Joseph	Roseville	Warren.
Leeds, L. L	Lincoln	Logan.
Legier, J. T	Keensburg	Wabash.

NAME.	POSTOFFICE.	COUNTY.
Leibrock, Ph. H.	New Memphis	Clinton.
Le Matty, J. B.	New Philadelphia	Cass.
Lester, G. B.	Oswego	Kendall.
Leonard, R. L.	Chicago	Cook.
Lewis, Denslow	Hyde Park	Cook.
Lichty, Daniel	Rockford	Winnebago.
LITTLEFIELD, H. H.	Beardstown	Cass.
Little, Jehu	Bloomington	McLean.
Long, H. H.	Orion	Henry.
Long, L. L.	Toulon	Stark.
Lonergan, W. D.	Chicago	Cook.
Loomis, E. B.	Chicago	Cook.
LORD, F. H.	Plano	Kendall.
Lovewell, C. H.	Chicago	Cook.
Luster, L. E.	Larchland	Warren.
Lydston, G. F.	Chicago	Cook.
Lyford, W. H.	Port Byron	Rock Island.
Lyman, H. M.	Chicago	Cook.
Maclay, A. I.	Delavan	Tazewell.
Malone, L. A.	Jacksonville	Morgan.
Mansfield, W. A.	Metamora	Woodford.
Manley, P. G.	Keensburg	Wabash.
Martin, F. H.	Chicago	Cook.
Martin, Geo. A.	Brownstown	Fayette.
Marshall, Ira E.	Chicago	Cook.
Matthews, J. P.	Carlinville	Macoupin.
Mattison, F. C. E.	Chicago	Cook.
Mather, H. H.	Auburn Park	Cook.
Matthei, P. H.	Chicago	Cook.
May, J. W.	Mason City	Mason.
Maxwell, J. B.	Mt. Carmel	Wabash.
McAnally, J. T.	Carbondale	Jackson.
McArthur, L. L.	Chicago	Cook.
McClanahan, W. S.	Woodhull	Henry.
McCullough, J. R.	Chicago	Cook.
McFarland, Anne H.	Jacksonville	Morgan.
McIlvaine, Thos. M.	Peoria	Peoria.
McIntosh, A. J.	Allendale	Wabash.
McIntyre, C. J.	Chicago	Cook.
McKennan, H.	Paris	Edgar.
McKenzie, J. F	Le Roy	McLean.

NAME.	POSTOFFICE.	COUNTY.
McKenzie, W. R.	Chester	Randolph.
McKinney, J. G.	Barry	Pike.
McMann, W. W	Gardner	Grundy.
McMennamy, B. F	Bethany	Moultrie.
McMurray, R. J	Linn	Wabash.
McNary, W. H.	Martinsville	Clark.
McPherson, C. W	Hazelhurst	Whiteside.
McWilliams, S. A	Chicago	Cook.
Mergler, Marie J	Chicago	Cook.
Miller, De Laskie	Chicago	Cook.
Miller, D. W	Gilman	Iroquois.
Miller, Jno. S	Peoria	Peoria.
Miller, J. H.	Pana	Christian.
Miller, Katharine	Lincoln	Logan.
Miller, T. W.	Chicago	Cook.
Milligan, Josephine	Jacksonville	Macoupin.
Mitchell, E. L.	Roseville	Warren.
Mitchell, R. J	Girard	Macoupin.
Montgomery, E. B	Quincy	Adams.
Montgomery, F. H	Chicago	Cook.
Montgomery, W. T.	Chicago	Cook.
Moon, O. W	Lockport	Will.
Morgan, Elijah A	Maroa	Macon.
Morris, E. V. D	Galesburg	Knox.
Morton, A. J.	Williamsfield	Knox.
Morton, J. S.	Vernon	Marion.
Moyer, H. N.	Chicago	Cook.
Moyer, M. L	Butler	Montgomery.
Mudd, W. A	Athens	Menard.
Murfin, W. W	Patoka	Marion.
Murphy, J. B.	Chicago	Cook.
Myers, J. C	Clinton	De Witt.
Nash, A	Joliet	Will.
Nash, W. R.	Fairmount	Vermillion.
Nelson, D. T.	Chicago	Cook.
Nesbitt, G. W	Sycamore	De Kalb.
Nevill, F. A	Meredosia	Morgan.
Newcomer, J. W.	Petersburg	Menard.
Newman, H. P	Chicago	Cook.
Niles, J. W.	Chicago	Cook.
Noble, C. M.	McLean	McLean.

NAME.	POSTOFFICE.	COUNTY.
Noble, Wm. L.	Chicago	Cook.
Nolan, E. C.	Mt. Pulaski	Logan.
Norbury, F. P.	Jacksonville	Morgan.
Norris, A. L.	Farmer City	De Witt.
Novak, F. J.	Chicago	Cook.
Nutt, F. L.	Marengo	McHenry.
Oaks, J. F.	Chicago	Cook.
Ospray, Joan A.	Dunning	Cook.
Oughton, C. M.	Chicago	Cook.
Owens, D. W.	Hersman	Brown.
Owens, J. E.	Chicago	Cook.
Owsley, F. D.	Chicago	Cook.
Oyler, P. H.	Mt. Pulaski	Logan.
Palmer, A. E.	Morris	Grundy.
Palmer, C. A.	Princeton	Bureau.
Paoli, G. C.	Chicago	Cook.
Park, C.	Oquawka	Henderson.
Parke, C. R.	Bloomington	McLean.
Parkhurst, F. J.	Danvers	McLean.
PATTERSON, R. J.	Batavia	Kane.
Patton, G. W.	Pana	Christian.
Patton, E. M.	Quincy	Adams.
Patton, J. M.	Chicago	Cook.
Pearman, J. T.	Champaign	Champaign.
Pegram, S. M.	Manchester	Scott.
Percy, Jas. F.	Galesburg	Knox.
Pettit, J. W.	Ottawa	La Salle.
Pettyjohn, E. S.	Alma, Michigan.	
Pierce, N. H.	Chicago	Cook.
PITNER, T. J.	Jacksonville	Morgan.
Pitner, F. R.	Clay City	Clay.
Plummer, S. C., Jr.	Chicago	Cook.
Plummer, S. C.	Rock Island	Rock Island.
Pogue, Joseph	Edwardsville	Madison.
Powell, A. M.	Collinsville	Madison.
Prescott, William	Dallas City	Hancock.
Prince, A. E.	Springfield	Sangamon.
Prince, Jno. A.	Springfield	Sangamon.
Prince, L. H.	Chicago	Cook.
Pratt, H. L.	Elgin	Kane.

NAME.	POSTOFFICE.	COUNTY.
Quales, Niles T	Chicago	Cook.
Quine, William E	Chicago	Cook.
Rabe, W. L	Dwight	Livingston.
Rankin, A. C	Pullman	Cook.
Rauch, J. H	Chicago	Cook.
Reagin, C. G	Du Quoin	Perry.
Reasoner, R. W	Morrisonville	Christian.
Reat, J. L	Tuscola	Douglas.
READ, N. S	Chandlerville	Cass.
Reece, M	Abingdon	Knox.
Reynolds, A. R	Chicago	Cook.
Reynolds, H. J.	Chicago	Cook.
Rhodes, J. E	Chicago	Cook.
Richards, A. S. D	Chicago	Cook.
Richards, Wm. M	Joliet	Will.
Ridlon, John	Chicago	Cook.
Ring, Jno	Chicago	Cook.
Robbins, Jos	Quincy	Adams.
Robbins, M. M	Aurora	Kane.
Robinson, F. B	Chicago	Cook.
Robinson, F. C	Wyanet	Bureau.
Robison, J. A	Chicago	Cook.
Rook, Chas. W	Quincy	Adams.
Rooney, A. F	Quincy	Adams.
Rooney, M	Quincy	Adams.
Root, E. H	Chicago	Cook.
Roskoten, O. J	Peoria	Peoria.
ROSKOTEN, ROBT	Peoria	Peoria.
Ross, G. W	Carrollton	Greene.
Rutherford, C	Chicago	Cook.
Ryan, L. R	Galesburg	Knox.
Ryan, Walter	Springfield	Sangamon.
Ryon, Geo	Amboy	Lee.
Sanders, J. W	Windsor	Shelby.
Sargent, A. M	Lincoln	Logan.
Sargent, Sam'l	Lincoln	Logan.
Saunier, A. J. C	Libertyville	Lake.
Schaefer, F. C	Chicago	Cook.
Schmidt, F. W	Riverdale	Greene.
Schneck, J	Mt. Carmel	Wabash.

NAME.	POSTOFFICE.	COUNTY.
Schreiber, G. F	Maywood	Cook.
Seaman, M. W	Shipman	Macoupin.
Senn, N	Chicago	Cook.
Servoss, A. G	Havana	Mason.
Sherman, W. P	West Pullman	Cook.
Shinn, W. R	Chenoa	McLean.
Shipp, F. J	Petersburg	Menard.
Sibley, C. W	Fairfield	Wayne.
Sikes, H. B	Chicago	Cook.
Silverthorn, L. L	Charleston	Coles.
Simmons, E. U	Erie	Whiteside.
Skeer, J. D	Chicago	Cook.
Sibley, C. W	Fairfield	Wayne.
Slater, Catharine	Aurora	Kane.
Sloan, W. K	Moline	Rock Island.
Small, A. R	Chicago	Cook.
Smedley, N. J	Chicago	Cook.
Smith, C. F	Danforth	Iroquois.
Smith, Lee	Bloomington	McLean.
Smith, C. G	Chicago,	Cook.
Souger, W. E	Iuka	Marion.
Sparling, W. H	Moawequa	Shelby.
Spear, J. W	Mason City	Mason.
Spear, L. E	Shirley	McLean.
Sprague, T. J	Joliet	Will.
Stahl, F. A	Chicago	Cook.
Standley, Emma B	Alexis	Warren.
Standley, J. W	Alexis	Warren.
Starkey, H. M	Chicago	Cook.
Starkweather, R. E	Chicago	Cook.
Steele, D. A. K	Chicago	Cook.
Stehman, H. B	Chicago	Cook.
Stephenson, B. M	Kilbourne	Mason.
Stevenson, S. H	Chicago	Cook.
Stericker, G. F	Springfield	Sangamon.
Stoddard, G. W	Ramsey	Fayette.
Stowell, J. H	Chicago	Cook.
Stringfield, C. P	Chicago	Cook.
Strong, A. B	Chicago	Cook.
Stubblefield, Frank	El Paso	Woodford.
Stubbs, J. E	Chicago	Cook.
Studer, Jos	Peoria	Peoria.

NAME.	POSTOFFICE.	COUNTY.
Sweetland, W. M.	Highland Park	Cook.
Sykes, H. B.	Bardolph	McDonough.
Thomas, A. L.	Chicago	Cook.
THOMPSON, L. G.	Lacon	Marshall.
Thompson, Littleton	Hinckley	De Kalb.
Thompson, Mary H.	Chicago	Cook.
Thompson, P. C.	Jacksonville	Morgan.
Tieken, J. D.	Coatsburgh	Adams.
Tilley, Robt	Chicago	Cook.
Tobias, G. J.	Chicago	Cook.
Todd, J. F.	Chicago	Cook.
Tombaugh, L. H.	Milburn	Lake.
Tope, J. W.	Oak Park	Cook.
Townsend, J.	Springfield	Sangamon.
Troutt, E. H.	Chicago	Cook.
Troutt, J. J.	Nashville	Washington.
True, Chas.	Chicago	Cook.
Truesdale, C.	Rock Island	Rock Island.
Turner, B. S.	Chicago	Cook.
Tweddale, Jas.	Washburn	Woodford.
Tyler, Jno. H.	Clinton	De Witt.
Tyler, W. R.	San Jose	Mason.
Uran, B. F.	Kankakee	Kankakee.
Vanderhoof, H. W.	Wheaton	Du Page.
Van Hook, Weller	Chicago	Cook.
Van Horn, A. K.	Jerseyville	Jersey.
Veatch, W. H.	Carthage	Hancock.
Vertrees, C. M.	Murrayville	Morgan.
Verity, W. P.	Chicago	Cook.
Wagner, Carl	Chicago	Cook.
Walbridge, L. P.	Decatur	Macon.
Walker, J. B.	Effingham	Fayette.
Wallace, J. H.	Monmouth	Warren.
Walters, J. P.	Fairfield	Wayne.
Ward, C. W.	Chicago	Cook.
WARE, LYMAN	Chicago	Cook.
Warner, A. L.	Kankakee	Kankakee.
Warren, W. B.	New Berlin	Sangamon.
Waters, L. C.	Woodstock	McHenry.

NAME.	POSTOFFICE.	COUNTY.
Watkins, T. J	Chicago.,	Cook.
Watson, Walter	Mt. Vernon	Jefferson.
Waxham, F. E	Denver, Colorado.	
Webster, G. W	Chicago	Cook.
Webster, J. C	Chicago	Cook.
Webster, J. R	Monmouth	Warren.
Weidner, M. R	Dalton	Moultrie.
Welch, W. W.	Galesburg	Knox.
West, W. C	Geneseo	Henry.
Wescott, C. D	Chicago	Cook.
Weston, E. B	Chicago	Cook.
Wetmore, A	Waterloo	Monroe.
White, D. A.	Carlock	McLean.
White, J. L	Bloomington	McLean.
Whitley, J. D	Petersburg	Menard.
Whitmire, J. S.**	Metamora	Woodford.
Whitmire, J. W	Forrest	Livingston.
Whitten, T. J	Nokomis	Montgomery.
Wilcox, E. A	Minonk	Woodford.
Wilcox, Wm. L	Irving Park	Cook.
Wilder, W. H	Chicago	Cook.
Wiley, F. A	Earlville	La Salle.
Wilson, W. G	Shelbyville	Shelby.
Will, O. B	Peoria	Peoria.
WILLARD, E. R	Wilmington	Will.
Williams, Jno. F	Chicago	Cook.
Williamson, M. F	Joliet	Will.
Wilson, J. T	Galesburg	Knox.
Wilson, W. G	Shelbyville	Shelby.
Winchester, Wm	Elgin	Kane.
Windette, R. A	Aurora	Kane.
Wing, E	Chicago	Cook.
Winter, H. A	Saybrook	McLean.
Wood, C. A	Chicago	Cook.
Woodworth, P. M	Chicago	Cook.
WRIGHT, JNO.*	Clinton	De Witt.
Wylie, S. M	Paxton	Ford.
Zeller, Geo. A	Peoria	Peoria.
Zeller, J. G	Spring Bay	Woodford.
Zenk, F. G	Troy	Madison.

THE

ILLINOIS STATE MEDICAL SOCIETY.

PROCEEDINGS

OF THE

FORTY-THIRD ANNUAL MEETING,

HELD IN

CHICAGO, MAY 16, 17 AND 18, 1893.

FIRST DAY---TUESDAY MORNING.

The Society convened in the Commandery Hall of the Masonic Temple, and was called to order by the President, DR. E. FLETCHER INGALS, of Chicago, at 9:30 A. M., who said:

Gentlemen of the Illinois State Medical Society: The hour has arrived to open the meeting, and in calling you to order I wish to express my high appreciation of the honor you have conferred upon me in electing me as your presiding officer, for in my mind there is no political honor compared with that bestowed by a society of this sort.

The REV. H. W. THOMAS, LL.D., of Chicago, offered prayer.

REPORT OF THE EXECUTIVE COMMITTEE, THE PRESIDENT, EX-OFFICIO, CHAIRMAN.

The PRESIDENT read the report of the Committee, as follows:

In preparation for this meeting the Executive Committee has in some respects departed from the customs of the Society, and introduced certain innovations that it is thought will render our sessions more profitable.

You will notice that the "address of welcome" and the "response" have been omitted, both of which would have occupied considerable time without in any way adding to the scientific work of the Society. Whether this is a precedent which should be followed, can be determined only by the conditions that may be present at future meetings, but in the present instance, where there is a large amount of scientific work to be accomplished, we have felt it necessary to economize time.

Another means adopted to save time, and one which we believe it would be well to follow in future, consists in securing as large a registration of members as possible before the meeting.

The Executive Committee and the Committee of Arrangements jointly, considered carefully the question of furnishing entertainments for the members, and finally decided that it was best to abandon this feature, with the exception of the private reception to be given by Dr. and Mrs. Brower. The most potent reason for this decision was that for several years there has been a growing feeling that these entertainments are burdensome and of questionable advantage. It was urged that if the profession of Chicago provided expensive entertainment for the Society, the members in smaller cities would feel it necessary to do the same, and thus our meetings would be made burdensome to them, therefore the best interests of the Society appeared to be promoted by abandoning this custom. It was also thought that owing to the unusual attractions which are present this year, members would not have time to attend more than one reception. It was further hoped that this might be taken as a precedent for the future, in the abandonment of all entertainment at the expense of the local profession.

The officers of the various sections have obtained an unusually long list of interesting papers, which will necessitate carrying on the work of two sections at the same time, and will demand punctuality and dispatch in the general meetings.

We have arranged to begin early, and to occupy the whole of the first day and evening.

The work of the second day will begin promptly at nine o'clock (as early as it is thought the members can get here after their

breakfasts); but the afternoon of this day will be given up to visiting the hospitals, colleges, libraries, and other places of interest, and will allow the members time for a glimpse at the World's Fair.

Thursday morning, the unfinished scientific work of the Sections will be taken up and completed, and there will be a general meeting for the final business of the session.

The program arranged as a part of the duty of this Committee, will now be presented by our Permanent Secretary, Dr. D. W. Graham.

Dr. Graham: A copy of the program was mailed to each member of the Society about a week before the meeting. It will require but two or three minutes study to enable each one to see the order of proceedings for each day and the program of each section. Hence no explanations are required.

Dr. W. T. Montgomery moved the adoption of the report as presented, which was seconded by Dr. B. B. Griffith.

Dr. Graham: You will notice that under the head of Special Notices, on page four of the program, the Executive Committee announces that a motion will be made to change one order as printed. The By-Laws require that the Committee on Nominations be announced on the morning of the second day. Of course, we have it printed in that way, yet this year, on account of the limited time assigned for the general meetings of the Society, the Committee thought the work of the Committee on Nominations could hardly be completed properly if the by-law were carried out. I therefore move as an amendment to the motion, that the by-law be suspended and that this Committee be appointed this evening after the adjournment of the Sections.

The amendment was accepted and the motion was carried.

The President: The next order on the program is the report of the Committee of Arrangements, Dr. E. Ingals, of Chicago, Chairman.

Dr. Ingals: Your Committee think there is no necessity for making a formal report at this time; later in the day would be much better when the attendance is larger, and when we know more definitely what we wish to do.

THE PRESIDENT: We will now listen to the report of the Committee on Registration; Dr. Geo. N. Kreider, Springfield, Chairman.

DR. KREIDER: Mr. President and members of the Society: As you are all probably aware, a new method of registration was adopted by the officers this year with, we think, great success; at any rate, it has been a great accommodation to the Treasurer in collecting dues, and he confidently hopes there will be less conflict in regard to the payment of dues and a fewer number of mistakes than heretofore. It has met with the general approval of the members of the Society, only one member taking exception to this plan of registration and collection of dues. This member makes the point that it is not exactly in accordance with the Constitution and By-Laws. It might be proper to adopt a resolution of approval of this procedure, if the President thinks best to do so. Up to the present time 406 members have registered, either as life members, or as having paid dues, and are entitled to take part in the proceedings of the Society. Of this number about 100 are new members. This addition of new members is due to the efforts of our President, who has been especially active in extending the membership from the eligible members of the local societies. As a result of his efforts also, some twenty-five or thirty, who were formerly members of this Society, have renewed their allegiance. I will not at present read the names of those who should be at this time dropped for delinquency, but will do so later, if necessary.

THE PRESIDENT: If there is no objection, the report of the Committee on Registration will be accepted.

There being no objection, the report was accepted.

Under the head of "miscellaneous business communications," Secretary Graham said that in section one the paper of Dr. J. B. Maxwell, of Mount Carmel, was misplaced. He moved that it be transferred to section three. Seconded and carried.

THE PRESIDENT: I notice that the Chairman of the Committee of Arrangements omitted to call the attention of the Society to the entertainment which will be given Wednesday

evening by Dr. and Mrs. Brower. I hope the members of this Society will not make other arrangements for that evening. You have all received invitations.

Secretary Graham said he had received a number of letters from members of the Society who expressed a desire to attend the meeting, but were not able to do so. Some of these letters are from old members who extend their best wishes to the Society.

We have a provision in the Constitution for making life members of the Society in two ways. One is by paying twenty years' dues consecutively, and the other is by vote on account of age, infirmity or disability. There are two members of this Society who have been with us for a good many years, who are getting old and do not take as active an interest in it as formerly, and yet they do not wish their names dropped. I refer to Dr. William E. Clark, of Chicago, and Dr. G. B. Lester, of Oswego, and move that they be made life members from this date. Seconded.

Dr. S. C. Plummer, Rock Island: I have been a member of this Society for many years and I do not think I have ever failed to pay my dues. If I remember rightly, I have paid my dues for the last thirty years.

Dr. E. Ingals: I move as an amendment, that Dr. Plummer's name be added to the two already mentioned. Seconded.

Dr. Graham: I accept the amendment. I ought to say however, that a great many members who think they have paid their dues consecutively for twenty or more years will see they are mistaken if they look over the Treasurer's books. They will find that they have skipped a year or two here and there, and forgotten it, which is a very easy thing to do.

The motion was then put by the Chair and carried.

Dr. Clark thanked the Society most cordially for the favor it had bestowed.

Dr. E. Ingals, Chairman of the Committee of Arrangements, read invitations from the Chicago Post-Graduate Medical School, the Cook County Hospital, the Presbyterian

Hospital and the Chicago Policlinic, inviting the members to visit these institutions.

The invitations were accepted.

President Ingals then introduced Dr. D. R. Brower, of Chicago, who delivered the address of section three. Subject "The Relation of State Medicine to Cholera and Tuberculosis."

SECTION ONE—FIRST SESSION.

The Section was called to order by the Chairman, Dr. N. S. Davis, Jr. Secretary, Dr. J. H. Miller, Pana.

Dr. C. B. Johnson, of Champaign, read a paper on "Diphtheria in Champaign County."

Discussed by Drs. R. H. Babcock, J. A. Baughman, N. S. Davis, Sr., J. H. Tyler, E. Ingals, G. W. Nesbitt, H. McKennan, and, in closing, by the essayist.

Dr. J. M. G. Carter, of Waukegan, followed with a paper entitled "The Relation of Bronchitis to Broncho-Pneumonia and other Catarrhal Diseases of the Respiratory Organs," which was discussed by Drs. R. H. Babcock, E. Ingals, and, in closing, by Dr. Carter.

Dr. William E. Casselberry, of Chicago, read a paper on "Rhinitis in Children; its Causes, Variety and Treatment."

Discussed by Dr. Henry Gradle, of Chicago.

SECTION ONE—SECOND SESSION.

Dr. Mary H. Thompson, of Chicago, read a paper entitled "A Unique Case of Typhoid Fever with its Complications."

Discussed by Drs. Hollister, E. Ingals, Clark, J. B. Herrick, Babcock, and James Tweddale, of Washburn.

Dr. Ludvig Hektoen, of Chicago, read a paper on "Acute Ulcerative Endocarditis," which was discussed by Drs. Babcock, Herrick, Earle, and, in closing, by Dr. Hektoen.

Dr. Frank S. Johnson, of Chicago, read a paper on "Exophthalmic Goitre."

Discussed by Drs. Quine, Skeer, Hektoen, and, in closing, by the essayist.

SECTION ONE—THIRD SESSION.

Dr. J. A. Baughman, of Neoga, read a paper on "Chorea," which was discussed by Dr. William J. Eddy, of Shelbyville.

Dr. Katharine Miller, of Lincoln, read a paper on "Mucous Colitis."

Dr. J. B. Maxwell, of Mount Carmel, read a paper entitled "Care of Epileptics."

Discussed by Dr. Brower.

Dr. George W. Webster, of Chicago, followed with a paper on "Alcohol, its Physiological Action."

Dr. A. E. Prince, of Springfield, read a paper on "Prevention of Blindness from Ophthalmia Neonatorum, through Legislation and Treatment."

Adjourned.

SECTION TWO—FIRST SESSION.

Chairman, Dr. Michael Rooney, Quincy; Secretary, Dr. Everett J. Brown, Decatur.

The first paper read was by Dr. W. W. Jaggard, of Chicago, entitled "Puerperal Eclampsia," which was discussed by Dr. Earle, and, in closing, by the essayist.

Paper referred to the Publication Committee.

Dr. H. McKennan, of Paris, read a paper entitled "Symphyseotomy, compared with its Substitutes, with references to Case."

Dr. George N. Kreider, of Springfield, read a paper on "Symphyseotomy."

The two papers were discussed jointly by Drs. Jaggard, Newman, Earle, and, in closing, by the essayists.

SECTION TWO—SECOND SESSION.

Dr. John A. Prince, of Springfield, read a paper on "Prolapsus Uteri with Retro Deviation, Treated by Ventro-Fixation, with Reports of Cases."

Dr. Henry T. Byford, of Chicago, followed with a paper entitled "The Treatment of Uterine Fibroids."

Dr. H. W. Kendall, of Quincy, read a paper entitled "An Unusual Plea for the Gynecologists."

Dr. O. B. Will, of Peoria, contributed a paper on "Catheterization of the Fallopian Tubes," which was discussed by Dr. Kendall.

Dr. C. W. Rook, of Quincy, read a paper entitled "Contraction of the Cervix Uteri upon the Neck of the Fœtus; a source of danger to the latter, and a Principal Cause of the Prolongation of the Second Stage of Labor."

Discussed by Drs. A. J. C. Saunier, L. H. Corr, H. W. Kendall, and Eliza H. Root.

Dr. Henry P. Newman, of Chicago, read a paper on "Prolapsus of the Uterus and Adjacent Organs."

Dr. A. C. Corr, of Carlinville, followed with a paper entitled "Little Things in Ophthalmology."

Discussed by Dr. C. D. Wescott.

Dr. Josephine Milligan, of Jacksonville, contributed a paper entitled "Treatment of Breach Presentations," which was read by the Secretary of the Section in the absence of the author.

FIRST DAY---TUESDAY AFTERNOON.

The general meeting was called to order by President Ingals.

SECRETARY GRAHAM: I desire to tender my resignation as Permanent Secretary of the Society before the Committee on Nominations meet to organize. I have served the Society now for seven years in this capacity and I think the honors and the duties connected with such an office should be passed around.

On motion the resignation was accepted.

Dr. E. Ingals, as chairman of the Committee of Arrangements, read an invitation from the Chicago Gynecological Society for the members to attend its meeting on Friday evening, May 19, at the Grand Pacific Hotel.

On motion the invitation was accepted.

FIRST DAY---TUESDAY EVENING.

The Society re assembled at eight P. M. in general session, and was called to order by the President.

The Chair invited all ex-Presidents of the Society to take seats on the platform, and Drs. C. C. Hunt, John Wright, C. W. Earle, and E. P. Cook, responded.

The Secretary then announced the Committee on Nominations as follows:

NOMINATING COMMITTEE.

Crawford Co. Medical Society,	C. Barlow.
Æsculapian Society, Wabash Valley,	J. A. Baughman.
Edgar Co. Medical Society,	H. McKennan.
Fox River Valley Medical Society,	J. C. Augustine.
McLean Co. Medical Society,	A. T. Barnes.
Capital District Medical Society	E. J. Brown.
Brainard District Medical Society,	K. Miller.
Morgan Co. Medical Society,	Albyn Adams.
District Medical Society of Central Illinois,	J. H. Miller.
Peoria Medical Society,	J L. Brown.
Chicago Gynecological Society,	H. P. Newman.
North Central Medical Society,	C. A. Plummer.
Kankakee Co. Medical Society,	B. F. Uran.
LaSalle Co. Medical Society,	J. W. Petit.
Adams Co. Medical Society,	C. W. Rook.
Champaign Medical Society,	J. C. Harmon.
Douglas Co. Medical Society,	J. L. Reed.
Wabash Co. Medical Society,	J. B. Maxwell.
DeKalb Co. Medical Society,	Dr. Nesbit.
Chicago Medico-Legal Society,	D. R. Brower.
Military Tract Medical Society,	O. B. Will.
DeWitt Co. Medical Society,	J. H. Tyler.
Chicago Medical Society,	E. Ingals.
Chicago Pathological Society,	D. W. Graham.

After the rendering of a musical selection by Mr. Dimond, Dr. O. B. Will, First Vice-President, took the chair and President Ingals delivered his annual address.

At its close Dr. Sanger Brown, Chicago, moved that a committee be appointed by the Chair to consider the practical suggestions contained in the President's address, report to be made at a subsequent session of the Society.

Seconded by Dr. J. H. Etheridge and carried.

The First Vice-President appointed on this Committee Drs. Sanger Brown, C. C. Hunt and E. P. Cook.

Dr. I. N. Danforth, of Chicago, then delivered the address of Section One. Subject: "The Prognostic Value of Tube Casts."

Dr. Nicholas Senn, of Chicago, delivered the address of Section Two. Subject: "Laparo-Hysterotomy; its Indications and Technique."

Secretary Graham moved that the Nominating Committee meet immediately after adjournment.

Seconded and carried.

On motion, the Society adjourned till Wednesday, nine A. M.

SECOND DAY—WEDNESDAY MORNING.

The Society was called to order by President Ingals at 9.30.

The first business in order was announcements and communications by the Chairman of the Committee of Arrangements.

Dr. Ingals repeated the invitations of the previous day for the benefit of those who were not in attendance at the opening of the first session.

Secretary Graham called the attention of the Society to the importance of members registering their names in the official registration book, as it was the official list for the Publication Committee. It was the only method of securing the names of those in attendance for the transactions.

The President called for reports of Officers and Standing Committees.

The report of the Committee on Publication was as follows:

ANNUAL REPORT OF THE COMMITTEE ON PUBLICATION.

The Committee awarded the contract for publishing the transactions of 1892 to the John Morris Co., of Chicago, which was the lowest responsible firm of several, bidding in competition. The books were delivered to the Committee ready for distribution the last week in September.

Four hundred copies were issued at a cost, exclusive of incidentals, of $590.47. There were three photo-gravure portraits of deceased members, which cost the sum of $39.75.

The book contains 511 pages of printed matter, which makes it considerably larger than the transactions of any previous year.

Copies were sent to all members entitled to receive them until the edition was exhausted, which was about the middle of the year.

A few members who paid dues late in the year did not get copies. This is the first year in the history of the Society in which the supply was exhausted before the next annual meeting. The explanation is that more than the usual number of delinquents paid up during the year after the estimate was made and the printing began.

As usual, and in accordance with instructions from the Society, copies were sent to all important medical libraries and the charitable State institutions. Five copies were sent to medical journals and one was sent in exchange to most of the other State medical societies. One copy was sold.

The Committee has not yet been able to secure a complete file of the old transactions for use of the Society. That for 1855 is still wanting, but the probabilities are that this can be secured in the near future.

Respectfully submitted,

D. W. Graham, Chairman.

Dr. J. M. G. Carter, of Waukegan, moved the adoption of the report.

Seconded and carried.

The report of the Treasurer was called for, which was read by Dr. Kreider, as follows:

GEORGE N. KREIDER, Treasurer,
In account with the Illinois State Medical Society:

Dr.

Cash on hand May 12th, 1892	$ 874.99
Receipted as per Book No. 1	303.00
" " " " " 2	276.00
" " " " " 3	212.50
" " " " " 4	295.00
" " " " " 5	288.00
Sale of Transactions—Dr. Graham	8.00
Total	$2,257.49

Cr.

Disbursements as per vouchers	$1,233.70
Certified check to balance	1,023.79
	$2,257.49

Voucher No. 1, D. Oliphant	$ 79.00
" " 2, Phps. Bro	4.25
" " 3, Whitford	87.65
" " 4, D. W. G	100.00
" " 5, G. N. K	65.00
" " 6, Photos	39.75
" " 7, J. Morris	34.60
" " 8, J. Morris	136.70
" " 9, J. Morris	590.47
" " 10, Hall	50.00
" " 11, E. F. I	5.00
" " 12, Oliphant	7.00
" " 13, * ——	0.00
" " 14, J. M. G. C	9.28
" " 15, E. F. I	25.00
Total	$1,233.70
Total Receipts shown by Ledger	$1,377.50
Total Receipts shown on Rect. Bks	1,374.50

Difference $3.00, explained by the credit of Dr. F. C. Schaefer on Ledger and not on Receipt Book.

Approved May 16, 1893. { O. B. WILL, 1st Vice President.
D. R. BROWER, 2d Vice President.

Dr. E. Ingals moved the adoption of the Treasurer's report, and that it be referred to the Committee on Publication. Seconded and carried.

The report of the Committee on Medical Societies was then called for, and read by the Chairman, Dr. Wm. O. Ensign, of Rutland.

REPORT OF THE COMMITTEE ON MEDICAL SOCIETIES.

At the last annual meeting of the Illinois State Medical Society, held at Vandalia, in May of last year, there was promulgated a revised constitution and by-laws then but recently adopted. Among the new provisions therein contained, appears authority (Sec. 1., Art. VI.) for the creation of the Committee, whose annual report is here presented for your consideration.

The multiple and almost unending labors of such committee are fairly indicated in that portion of the law included in Sec. 7, Art. VII, but the task thereby imposed can be realized only by a faithful endeavor to perform it as defined in the text. The duties are set forth under, at least, two distinct heads, viz.: first to "use means to promote a more complete organization of the profession of the State into county or district societies, and to establish reciprocal relations between them and this Society;" and second, "to collect and report such a list and statistics of all local societies in affiliation with this Society, as will be suitable for publication in the transactions."

In entering upon the discharge of these duties, for the first time in the history of this Society, your Committee was confronted with the fact, that no substantial data, carefully collected from each portion of the State, existed, from which to continue the work in the order named. That it would be necessary to proceed in an inverse order was made doubly apparent, by both the absence of such data and the language of the law, which stated that "This list, as revised and adopted from year to year, shall serve as an official guide for all purposes of the Society, or any of its officers or committees," thereby rendering the performance of the second duty of the greater importance in the work of 1893, both for the future guidance of the Society itself as well as its succeeding committees. Hence, our task must be initiated by entering upon a correspondence with one hundred and two counties and twenty-five or more cities and districts. This duty we have endeavored to discharge, as well as that of establishing reciprocal relations to the extent of the limited time

and facilities remaining at our hands, and, while the results must of necessity be very imperfect, yet we trust that ours will serve not a little to blaze the way for more satisfactory efforts by succeeding committees in the future. From the very nature of the largely preliminary work required of your first committee, it follows that its report must partake of detail to a very considerable extent.

By circular letters and written communications, information has been sought concerning every regular local medical society which has existed within the State of Illinois at any time during the past twelve years. These were found to consist of city, county and district societies and business or social medical clubs. The latter, not partaking in any noteworthy measure of a scientific character, have not been included in our lists.

Local medical societies that have sprung up over the State, from time to time, and perhaps like Aaron's rod have budded, blossomed and possibly borne fruit in a day, and then been quietly laid to rest, are almost without number. On the other hand, a few have had an existence and activity that is commendable of the character of the profession in the localities where they have existed. Adams County Medical Society, which alphabetically stands at the head of the list of county societies of the State, claims an organization that antedates, by a few months, the State Society, while of city organizations, Peoria has had an existence since 1848. But the eldest of the district is also the eldest of all medical societies now existing in Illinois. The Æsculapian Society of the Wabash Valley was chartered in 1846 and fully organized in 1847. Its early membership rolls contained not a few names of subsequently honored members of the State Medical Society. The societies here mentioned constitute the oldest three, having a continuous existence, of which information has been received, and each has had a long, useful and an almost uninterrupted history.

Of those now dormant there are a considerable number, and, while we have endeavored to omit such from our lists, a few may unavoidably appear thereon, since, from the very condition of things, some are retrograding, at the same time that vigor and progress are marking the course of others. Occasionally a society may

be found to have been either improperly entered or omitted, always however, for the want of sufficiently supplied data, by persons to whom application for information had been made.

Your Committee have assumed to include city societies within the scope of the work assigned them, although there are no such named in the constitution, nor can authority be found for their recognition as "local Societies in affiliation with this Society." We know of no county organization in Cook county, yet this county supplied very nearly one third of the membership of the State Society in 1892, and such membership was principally attained through city societies.

Of district organizations, the territory of a few includes portions of other States, and the membership in such States is therefore ineligible to membership in this Society.

Of all responding to the question of your Committee, as to qualifications and conditions of membership, a large majority were found to require the applicant to be a graduate of a recognized regular medical school, and that he be of good moral character and professional standing, while a portion demanded an additional acknowledgment of conformity to the code of ethics of the American Medical Association, the regulations of the State Medical Society or examination by their own board of censors.

A few named such conditions as "Licentiates of the State Board of Health," "Approval of the Board of Censors," "Graduates of Reputable Medical Institutions," "Title of M. D.," "Practitioners of Legitimate Medicine," or "Regularly Licensed Physicians,"—terms vague and uncertain as to qualifications, yet it is humbly confessed not much more so than the first section of the article on membership of this Society appears, when viewed in the light of the varied and sometimes cheap and unsatisfactory requirements of some subordinate organizations whose membership may be admitted equally with the representatives of those requiring more definite and thorough qualifications. Your Committee in pursuing their labors have met with the objection of inconsistency indicated, and believe that this Society should state in a clear and unmistakable manner, the standard by which its membership shall be gauged in the future, that it may serve as a guide, as well, to all

local societies seeking affiliation. It is believed that, in order to command proper respect and to promote its best interests and those of the profession, it should lead in this direction and not fall behind uncertain terms. In view of the foregoing and to provide for city societies, societies located in part only in the State and scientific bodies largely medical, as medico-legal societies whose membership includes members of the legal profession, your Committee would venture to suggest, as somewhat along the line indicated, a revision of Sec. 1, Art. III of the Constitution to read "Any permanent member of a city, county or district medical society who is also a resident of the State of Illinois and a graduate of a recognized regular school of medicine, may be eligible to membership in this Society." This, together with a corresponding introduction of the word *city* into Sec. 7 of Art. VI, it is thought, would be for the best interests of this organization, both as to its own membership, and to stimulate local societies to adopt a more uniform standard; and that it would obviate the objection that an applicant, disqualified for membership in one subordinate society, may, through another organization demanding very limited qualifications as to professional character and competency, enter into equal fellowship in the State Medical Society.

Of a few organizations we would make special mention.

First.—The Chicago Medico-Legal Society, whose name might mislead as to its medical character, on an examination of its roll of membership, may be found to consist, aside from those designated as honorary, of eighty-six medical and two non-medical members, hence its medical character cannot be questioned.

Second.—The Kankakee County Medical Society now admits dentists, while an amendment is under consideration by the North Central Illinois Medical Association to admit both regularly educated dentists and pharmacists, at least to honorary membership. All this still further points to the desirability of the change in the law previously suggested.

Third.—Through the efforts of this Committee there has recently been an active society organized at Geneseo for Henry County.

Fourth.—The youngest district organization is that comprising the counties of Alexander and Pulaski, constituted at Cairo last

November and bearing the ancient and historical title of "The Egyptian Medical Society."

Fifth.—The Army and Navy Medical Association, originally organized in the State and heretofore represented in this Society, having assumed a national character by extending its membership privileges to eligible residents of other States, has thereby ceased to bear such relations to this body as would justify further claim for representation therein.

An analysis of the enrollment of membership of this Society for 1892, including some 466 names, shows that twenty-five counties in the State were wholly unrepresented by even a single member, and that such counties were to be found both north and south, or from Boone to Alexander including more central parts of the State as well.

21	Counties	supplied	each	1	Member—Total	.....	21
15	"	"	"	2	" "	.....	30
8	"	"	"	3	" "	.....	24
8	"	"	"	4	" "	.....	32
5	"	"	"	5	" "	.....	25
3	"	"	"	6	" "	.....	18
3	"	"	"	7	" "	.....	21
3	"	"	"	8	" "	.....	24
3	"	"	"	9	" "	.....	27
1	"	"	"	10	" "	.....	10
1	"	"	"	11	" "	.....	11
2	"	"	"	12	" "	.....	24
1	"	"	"	15	" "	.....	15
1	"	"	"	16	" "	.....	16
1	"	"	"	19	" "	.....	19
1	"	"	"	149	" "	.....	149
					Total membership, 1892	.....	466

The membership from Cook County, which is represented by the highest number given, includes one now a resident of California.

It is further noted that of the twenty-four counties supplying five or more members, or a total of 329, constituting nearly three-fourths of the entire membership, few, if any, are without a vigorous city or county society, or are actively interested in a district

medical society within the territory of which such county is included.

Many formerly good working organizations in some of the largest counties are now dormant, while those in some of the smaller counties are found to be maintained with as much regularity and interest from year to year, as might be expected in large counties, and with a zeal that speaks highly for the members of the local profession.

For success, much depends upon a zealous, active and liberal minded secretary, and should he prove to possess a little of the spirit of the martyrs and be willing to submit to immolation for the welfare of his society and the profession of his locality, his self sacrifice and devotion may often be put to a thorough test in securing the best results.

Many organizations in their initiatory zeal, attempt to hold frequent meetings, and soon cease to exist, and are weakened by too attenuated efforts, rather than by concentrating their energies on one or two meetings yearly, and thus successfully maintaining a more permanent standing.

The question of conflicting interests of local societies has found objectionable place in the minds of not a few individuals, it is believed, however, with very exceptional instances of just occasion. City and county organizations can readily be limited by territorial boundaries. District societies may sometimes overlap their lines and this without reasonable objection, since separate portions of a county may find it more convenient to reach different district societies. Again, a district society should rarely assume, as has been occasionally done, to occupy territory until it has on its rolls at least more than a single representation from the county containing such territory. While there are several instances of district societies claiming portions of the same territory, yet there remain some parts of the State unoccupied by any, as notably the northwestern counties.

By properly arranged dates of meeting, the county may always be made to co-operate with and inspire interest in the district, and both in the State Society, as is now done in some localities, with no conflict between them.

The subjoined list includes eleven city, twenty-six county and fourteen district societies, or a total of fifty-one organizations, and although several others have been reported as in existence, having failed to obtain response to inquiries made for information, we are unable to certify to their present activity and are reluctantly compelled to leave them among the dormant organizations, perhaps not dead, but sleeping, whose vitality may well be the future subject of the succeeding committee's solicitude.

WM. O. ENSIGN, }
CHAS. W. HALL, } Committee.

DR. E. INGALS: I move that the report be referred to a committee of five, and that Dr. Ensign be made chairman of that committee, the remainder of the committee to be appointed by the Chair, to take action on the recommendations embodied in the report. Seconded.

The motion was then put and carried.

The Chair appointed as the committee, W. O. Ensign, John Wright, A. B. Strong, D. W. Graham and A. C. Corr.

CITY SOCIETIES.

Name of Society.	Date of Organization.	Place of Organization.	Active Membership	Date of Annual Meeting.	Number Meetings Annually.	President. Name.	President. Address.	Secretary. Name.	Secretary. Address.
Aurora Medical Society	Jan. 5, 1881	Aurora	33	1st Tues. in Jan	12	C. L. Smith	Aurora	R. A. Windett	Aurora.
Decatur Medical Society									
Chicago Academy of Medicine	July 21, 1890.	Chicago	40	2d Friday in Aug	12			J. G. Kiernan	Chicago.
" Gynæcological Society	Oct. 18, 1878.	"	38			E. J. Doering	Chicago	H. P. Newman	"
" Medical Society	April 5, 1852.	"	650	1st Monday in Apr.	24	C. W. Earle	"	J. C. Hoag	"
" Medico-Legal Society	May, 1886	"	88	1st Sat'day in June	4	O. H. Horton	"	Archibald Church.	"
" Ophthal. and Otological Society	Apr. 12, 1892.	"	25	in Jan.	8	E. S. Holmes	"	C. P. Prichard	"
" Pathological Society		"					"	E. S. Pettijohn	"
" Scandinavian Medical Society	Oct. 21, 1887.	"	30	3d Wednes. in Oct.	12	K. Sandberg	"	C. Heyn	"
Ottawa City Medical Society	April 4, 1855.	Ottawa	12	1st Tues. in April	12	R. F. Dyer	Ottawa	J. R. Hoffman	Ottawa.
Peoria City Medical Society	Apr. 19, 1848.	Peoria	35	Last Tues. in Oct	12	J. M. McIlvaine	Peoria	G. A. Zeller	Peoria.

COUNTY SOCIETIES.

Name of Society.	Date of Organization.	Place of Organization.	Active Membership	Date of Annual Meeting.	Number Meetings Annually.	President. Name.	President. Address.	Secretary. Name.	Secretary. Address.
Adams County Medical Society	Mar. 28, 1850.	Quincy	45	2d Monday in May.	12				
Bond County Medical Society	Nov. 13, 1886.	Greenville	15	1st Thurs. in Jan	4	Wm. T. Easley	Greenville	D. R. Wilkins	Pocahontas.
Champaign County Medical Society	1858.	Urbana	35	in Dec.	4	H. E. Cushing	Champaign	C. B. Johnson	Champaign.
Clinton County Medical Society	May 2, 1876.	Carlyle	14	1st Tues. in May	4				
Coles County Medical Society	1855.	Charleston	16	3d Thurs. in May	2				
Crawford County Medical Society	July, 1879	Robinson	19	2d Thurs. in July	6	T. N. Rafferty	Robinson	C. Barlow	Eaton.
De Witt County Medical Society	May 6, 1856	Clinton	24	2d Tues. in April	4	C. T. McLean	Hallsville	A. J. Tyler	Clinton.
Hancock County Medical Society	1875.	Carthage	10	1st Monday in May	4				
Henry County Medical Society	Mar. 2, 1893.	Cambridge	11	in May	2	L. A. Terry	Geneseo	C. W. Hall	Kewanee.
Jackson County Medical Society	1890.	Murphysboro	24		12			J. B. Rosson	Ava.
Jersey County Medical Society	1855.	Jerseyville	14	1st Tues. in April	1	A. A. Barnett	Jerseyville	A.P. Merriweather	Jerseyville.
Kankakee County Medical Society	Dec. 17, 1891.	Kankakee	26	1st Thurs. in Dec	6	R. Dewey	Kankakee	H. H. Rodgers	Kankakee.
Lake County Medical Society	June 5, 1884.	Waukegan	17	1st Thurs. in June.	4	W.W. Sweetland	Highland Park	A. C. Haven	Lake Forest.
La Salle County Medical Society	July 29, 1853.	Ottawa	40	Last Tues. in Apr.	1	E. W. Weis	Ottawa	J. J. Taylor	Streator.
Macon County Medical Society	1880.	Decatur	20	1st Tues. in May		I. N. Barnes	Decatur	J. H. Randall	Decatur.
Macoupin County Medical Society	Sept. 16, 1873.	Shipman	35	4th Tues. in April	4	L. H. Corr	Carlinville	A. C. Corr	Carlinville.
Marion County Medical Society	June, 1891	Odin	20	3d Tues. in June	4	J. L. Hallam	Centralia	E. E. Fyke	Odin.
McLean County Medical Society	Mar. 20, 1854.	Bloomington	57	1st Monday in Apr.	12	W.H.M'Cormick	Normal	F. J. Welch	Bloomingt'n.
Monroe County Medical Society	June 23, 1883.	Waterloo	11	in March.	2	J. S. Sennott	Waterloo	L. Adelsberger	Waterloo.
Morgan County Medical Society	April, 1866	Jacksonville	40	2d Thurs. in Dec	12	C. E. Black	Jacksonville	Josephine Milligan	Jacksonville
Perry County Medical Society	April, 18—	Du Quoin	16		4	H.P. Huntsinger	Pinckneyville	J. C. Sims	Du Quoin.
Shelby County Medical Society	1864.	Shelbyville		1st Tues. in Jan	12	W. J. Eddy	Shelbyville	W. G. Wilson	Shelbyville.
St. Clair County Medical Society	Feb. 24, 1866.	Belleville	26	1st Thurs. in Mar.	4	O. T. Moore	Marissa	Julius Kohl	Belleville.
Stephenson County Medical Society	July 11, 1878.	Freeport	21	2d Thurs. in July	2	S. C. Salter	Lena	Louis Stroskopf	Freeport.
Wabash County Medical Society	July 26, 1880.	Mt. Carmel	18	in July.	9	J. D. Kingsbury.	Browns	J. Schneck	Mt. Carmel.
Will County Medical Society	Jan. 27, 1886.	Joliet	32	Last Tues. in Feb.	12	T. J. Sprague	Joliet	M. E. Simenons	Joliet.

DISTRICT SOCIETIES.

Name of Society.	Date of Organization.	Place of Organization.	Active Membership	Date of Annual Meeting.	Number Meetings Annually.	President. Name.	President. Address.	Secretary. Name.	Secretary. Address.
Æsculapian Society of the Wabash Valley.	Feb. 17, 1847.	Lawrenceville	75	3d Wednes. in Nov.	2	J. J. Weinstein	Ter.Haute, Ind	Z. T. Baum	Paris.
Brainerd District Medical Society	May 17, 1877.	Mason City	55	4th Thurs. in April	4	J. S. Kennelley	Easton	Katherine Miller.	Lincoln.
Capital District Medical Society	Dec. 12, 1891.	Springfield	62	3d Thurs. in Jan	3	T. J. Whitten	Nokomis	B. B. Griffith	Springfield.
Centennial Med. Society of S. E. Illinois									
Central Illinois Medical Society									
District Medical Society of Central Illinois	Apr. 28, 1874.	Pana	50	Last Thurs. in Apr	2	W. J. Eddy	Shelbyville	J. N. Nelms	Taylorville.
Egyptian Medical Society	Nov. 15, 1892.	Cairo	12	in Nov.	16	W. P. Malone	Cairo	J. J. Gordon, Jr.	Cairo.
Embarras Valley Medical Society									
Fox River Valley Medical Society	Sept. 1, 1864.	Aurora	60		2	LouisVanPatten	St. Charles	H. L. Pratt	Elgin.
Iowa and Illinois Central Dist. Med. Ass'n.	1868.	Davenport, Ia.	25	2d Thurs. in July	4	W. L. Allen	Davenport, Ia.	G. L. Eyster	Rock Island.
Med. and Surg. Society of Western Illinois.	May 4, 1884.	Whitehall	51	1st Friday in Jan.	4	E. L. H. Barry	Jerseyville	A.P. Merriweather	Jerseyville.
Military Tract Medical Association	May 22, 1866.	Kewanee	130	3d Tuesday in Oct.	1	W. S. Holliday	Monmouth	H. M. Harrison	Bushnell.
North Central Illinois Medical Ass'n	Jan. 6, 1874.	Wenona	110	1st Tues. in Dec	1	Geo. Ryon	Amboy	Wm. O. Ensign	Rutland.
Southern Illinois Medical Association	July 20, 1875.	Jonesboro	200	2d Thurs. in May	2				

The report of the Committee on Medical Legislation was next in order, and was read by the Chairman, Dr. J. M. G. Carter, of Waukegan, as follows:

ABSTRACT OF REPORT OF COMMITTEE ON MEDICAL LEGISLATION.

BY J. M. G. CARTER, M.D., CHAIRMAN.

Immediately after the close of the meeting of the Society at Vandalia, 1892, the Committee was convened to plan the work for the ensuing year. A majority of the Committee were present. It was decided, after discussion then and later, that efforts should be made to secure legislation along several lines — for the revision of the law for the commitment of the insane, and to enlarge the state institutions for the accommodation of the 5,000 mental aliens in our state who are still unprovided for. It was decided also to look after the interests of the 3,000 feeble-minded who are not cared for by the State. Other matters to which attention has been given are the Medical Practice Act; An Act to Prevent or Control the Sale of Nostrums; the Inspection of Milk; Medical Expert Testimony, and Some Hygienic Measures. Bills have been introduced in the interest of these various subjects and every member of both Houses of the Legislature has been solicited to cast his vote and use his influence in favor of these measures. Many of these legislators have given us assurances of their good will and desire to help us. Some have asked us to confer with certain physicians in whom they have especial confidence. Letters have been written to these medical gentlemen and to others of the profession asking them to urge favorable action upon the bills we had before the legislature and particularly to secure the co-operation of their representatives.

Owing to certain combinations and circumstances over which we had no control, little seems likely to be done except in the matter of the Commitment of the Insane. This bill has been engrossed and is now ready for final action.* To Dr. Dewey, the efficient chairman of the special Committee who had this bill in charge, is due the credit for the success that has attended this measure — a success which undoubtedly will be complete.

*This bill has since been passed.

Up to the time of this meeting we have not secured the passage of any bill urged by this Committee and the various special committees appointed to assist our work. Medical legislation is of little interest to legislators when they have schemes of their own to carry through. We would advise, therefore, that in the future an attempt be made to secure the co operation of the medical profession at large in relation to all questions pertaining to medical legislation. Then the influence of some physician personally known to him may be brought to bear upon each member of the legislature.

J. M. G. Carter,
F. B. Haller,
B. M. Griffith,
E. F. Ingals (*Ex-of.*)
} Committee.

Dr. J. H. Hollister moved that the report be referred to the Committee on Publication.

Seconded and carried.

The President called for the report of the Committee on Necrology, which was read by the Chairman, Dr. John H. Hollister, of Chicago, as follows:

REPORT OF THE COMMITTEE ON NECROLOGY.

Gentlemen:—It becomes the duty of your Committee to record the deaths during the past year, of a number of your prominent members. In the preparation of this report your Committee has availed itself of the services of gentlemen who by reason of their intimate acquaintance with those deceased, were able from personal knowledge, to pay just tributes to their respective memories.

We have first to present a brief memento of the life and death of our distinguished member, Abraham Reeves Jackson, as given to the press by his college associate, Prof. W. E. Quine.

Abraham Reeves Jackson, A.M., M.D., was born in Philadelphia, June 17, 1827. He graduated from the Central High School in 1846, and from the medical department of the Pennsylvania University in 1848. Soon after graduation he began his professional career in Stroudsburg, Pa., where he remained twenty-two years. In 1862 he entered the United States army as Acting Assistant Surgeon, and after a brief period was advanced to the

position of Assistant Medical Director of the Army of Virginia. In 1870 he removed to Chicago and was prominently instrumental in securing the incorporation of the Woman's Hospital of the State of Illinois, Sept. 1, 1871, and for several years he was surgeon-in-chief of this institution. In 1872 he was elected lecturer on diseases of women in Rush Medical College, and in the following year the trustees, as a testimonial to his services, conferred upon him the honorary degree of M. D.

In 1877, Dr. Jackson resigned his position in Rush Medical College, and in 1879 that of surgeon-in-chief of the Woman's Hospital. In 1882 he became one of the founders of the College of Physicians and Surgeons, of Chicago, of which institution he was President and professor of gynecology to the time of his death, Nov. 12, 1892. In 1889, Dr. Jackson was elected President of the Association of Acting Assistant Surgeons of the United States army, and held this position also at the time of his death. In 1891 he was elected President of the American Gynecological Society. He was a member of the American Medical Association, American Academy of Medicine, Chicago Medical Society, Chicago Medico-Legal Society, the Chicago Gynæcological Society, British Gynæcological Society, an honorary member of the Detroit Gynæcological Society, and a corresponding member of the Boston Gynæcological Society.

Dr. Jackson was twice married, — first, in 1850, to Harriet Hollinshead, of Stroudsburg, Pa., and, in 1871, to Julia Newell, of Janesville, Wis. His wife and two daughters survive him.

The cause of his death was apoplexy, — due, probably, to thrombosis of the left middle cerebral artery. There was no autopsy.

On settling in Chicago, in 1870, Dr. Jackson limited himself to the practice of gynecology and soon attained honorable distinction. His practice was very lucrative but not very laborious; for he purposely limited it by keeping his fees so high as to discourage the patronage of any but well-to-do patients. His clientelage was drawn, in part, from the wealthier families of the city, but chiefly from the practice of his professional brethren in this and neighboring States. Probably no gynecologist in Chicago enjoyed and

merited in higher degree than Dr. Jackson the confidence and patronage of the medical profession, and no one could be more courteous and complimentary to the family physician than he. The reputation of any colleague, friend or foe, was safe in his keeping. He easily ranked as one of the most accurate diagnosticians and as one of the most skillful, and yet conservative, operators in his chosen specialty, among the many eminent men of this city.

As a medical teacher, Dr. Jackson was beloved and respected by students and colleagues alike. He possessed in rare degree the faculty of imparting knowledge. In the lecture room his manner was unaffected and likewise his speech. He never attempted oratory and yet never failed to be ready and even elegant in diction, and forceful in delivery. He was not often eloquent, but he never was tiresome. He was never declamatory in style, but was always interesting and instructive, and, at times, indescribably droll. He was clean of mouth as a woman and his personal influence over students was wholesome, and exercised in the most gentle and friendly way. His humor, for which he was so delightfully known, was always refined in expression and without the sting of personal application; it was never led up to by labored preparation, but it was unexpected and as spontaneous as the laugh of a child. He was always gentle and courteous, even under circumstances of extreme provocation. He was patient under unmerited criticism, and even under vulgar abuse, and never seemed to harbor resentment against an assailant.

As a writer on medical and other topics Dr. Jackson was well and favorably known and was always sure of respectful attention. He was an uncommonly liberal contributor to the highest grades of current literature, and the sharpness of his pen, no less than the sharpness of his scalpel, contributed to the development of his enviable reputation. He was a man of much social prominence and his social life was clean and strong, while his domestic life was one of ideal peacefulness and happiness. He was fond of fun, but not of coarseness; of jest, but not of vulgarity; of repartee, but not of biting personality. He was a charming converser and on all occasions shone as a refined gentleman, courteous but not

effusive; dignified but not forbidding; versatile but not pedantic; ready to be agreeable but not to the extent of smiling at obscenity or profanity. He was a gentleman.

Colleague and friend, farewell! A few more unimportant duties done and the rest of us, too, will be laid away, all unconscious that our places of activity have been filled and that the world goes on laughing and weeping as before. Peace be thine and happiness forevermore! W. E. Q.

We have also among the list of those deceased this year the name of Dr. William M. Chambers, one of the ex-Presidents of this Society. We present the minute of his life and death as furnished by his fellow townsman and associate, Dr. W. R. Patton, of Paris, Illinois:

Wm. M. Chambers, M.D., deceased, of Charleston, Ill., was born in Cynthiana, Ky., April 11, 1814. He was a son of James and Sally Chambers, both natives of Virginia. Dr. Chambers began the study of medicine in his native town in 1833, and in 1836 began practice in Harrison County, Ky. He graduated in 1843 from the medical department of Transylvania University, of Lexington, Ky. In 1836 he removed to Covington, Ky., where he practiced medicine and surgery until he removed to Coles Co., Ill., in 1855. In October, 1861, he was appointed by President Lincoln, Brigade Surgeon in the army, and served in the army of the Cumberland until July, 1865. He was twice breveted — first as Lieutenant Colonel and then as Colonel, for meritorious service and for the excellence of his reports and his superior management of hospitals. He has been president of the Kentucky State Medical Society, the Illinois State Medical Society, and of the Æsculapian Society of the Wabash Valley. He has held important positions in the American Medical Association. He was once a member of the Public Health Association of the United States.

He was at one time a member of the Board of Health of Illinois. He was married first in February, 1838, to Miss C. Ann Rebecca Porter, of Harrison Co., Ky. She died in 1840, leaving one son, Charles S. Chambers, who now resides in Charleston. He again married, the second time, in 1848, to Miss May Bryant Fields Ingalls, of Kentucky, a lineal descendant of Daniel Boone. She died

December 30, 1876, leaving two children, son and daughter,— the daughter, Mollie S., now the wife of Dr. Chas. Peyton, now living in Oklahoma; the son, Gavin T. Chambers, an attorney at law and member of the legislature of Kansas, where he now lives. Dr. Chambers was kind to everybody. He had a very forgiving disposition. If anyone did him a wrong he soon forgave him. He was of a joyous disposition. He counted it not only a duty but a privilege to attend every meeting of any medical society to which he belonged. He had acquired an extended reputation as a surgeon. He had an exalted opinion of the medical profession and sought to honor his high calling by a life devoted to his profession.

Dr. Chambers died at Charleston, Ill., Nov. 12, 1892, aged 78 years and 8 months. W. R. P.

We have also to mourn sincerely, the loss since last we met of another prominent member from our profession, that of Prof. J. Suydam Knox, of Rush Medical College. From an extended obituary notice prepared by his colleague, Prof. J. H. Etheridge, we select the following essential facts:

Dr. James Suydam Knox was born July 28, 1840, at Nassau, New York. He was the son of the Rev. J. P. Knox, LL.D., and Aletta Van Doren. On his father's side he was of Scotch ancestry, descending from the brother of John Knox, the Scotch Reformer. He traced back his family to David Knox, among the earliest settlers of Pennsylvania. The Van Dorens were of Holland descent, and settled early in the 17th century in New Jersey. For many generations his ancestors were Americans, thus indicating that the subject of our memorial was an American of Americans.

His boyhood was spent on the Island of St. Thomas in the West Indies where his father was in charge of the Reformed Dutch Church at St. Thomas. It was to his father, the Rev. Dr. J. P. Knox, that Dr. Edward Wilmot Blyden (the negro who has since been conspicuous in Liberia, having been appointed Governor Commissioner of the colored people of the United States, and was appointed minister to the Court of St. James) was indebted for the stimulus to classical training which

subsequently made the accomplished scholar, great linguist and prolific writer that he is to-day.

Dr. Knox's preparatory studies were finished at the Flushing Institute, at Flushing, Long Island, in 1856. He then entered Princeton College, at Princeton, New Jersey. He completed a full classical course there and was graduated in 1860. He was engaged in teaching in the Lawrenceville Academy, the preparatory department of Princeton University, when he enlisted in the Union Army as a private in the New Jersey Volunteers.

After his discharge from the army he began his medical studies in the Georgetown Medical College in Georgetown, D. C. He prosecuted his studies and was graduated from the College of Physicians and Surgeons in New York in 1866. He began the practice of his profession in Somerville, New Jersey. At the end of a year he relinquished a successful practice that he might prepare himself through hospital practice for better work in his profession. After passing a competitive examination with many others, he secured the position of physician and surgeon in the Brooklyn City Hospital, where he remained for a period of nearly two years. In 1869 he married Miss Elizabeth Hartwell of Somerville, New Jersey, and resumed his practice there. He removed to Chicago in 1873 and located on the West Side and at once took high rank as an accomplished physician. In a short time a large and lucrative practice came to him, which continued to increase until the time of his death.

Dr. Knox was a diligent man; he was always at work. He was never at a loss for employing his time. He read much, kept himself posted on current history and was able to discuss interestingly writers of fiction, history and science. He was systematic and economical of time, and was thus enabled to fulfill punctually all social and professional engagements. As a writer he was lucid and forceful. While he lectured on that branch, he began to write a work on Therapeutics, but his ever increasing practice finally forbade his carrying to completion this fondly cherished project. His intention was to record the various therapeutic actions of remedies claimed by the different schools of medicine, making a polyglot therapeutics. At the time of his fatal illness he was engaged

in writing an extensive article on some topic relating to children's diseases for an encyclopedia to be brought out in the near future in New York City.

The elements of success as a practitioner consisted in his abundant preparation to practice his profession which at once brought excellent results, and in his genial ways, his patience and firmness with sick people. He was utterly devoid of vacillation and uncertainty in his directions to his patients, thus indicating that he knew exactly what he wished to accomplish and how to secure it. He possessed in a high degree the tenderness with firmness, the decision with caution in the management of his patients which always engendered in their minds the most absolute confidence in his ability.

His heart was always open to the appeals of the poor and destitute in their infirmity. He cared for an unusually large number of people from whom he knew he would receive no remuneration. In their poverty and distress they always found in him a good friend and patient adviser. His sympathy at times with the very poor was touching in the extreme. He not only gave them advice, but oftentimes he gave them the means with which to purchase their medicines.

As a lecturer and teacher he was always extremely popular. The lectureship which he received by *concours* in 1874, he filled until the spring of 1882, when he received the appointment of Adjunct Professor of Obstetrics and Diseases of Children. He was excellent and unexceptional in his style of speaking, quiet, fluent, self-possessed, systematic and thorough.

It was greatly through his influence that the Maternity of the Presbyterian Hospital was established one year ago. For that department he secured contributions for sustaining several beds. The success of that department is an eloquent commentary on his far sighted wisdom in his urging its establishment.

He was a member of the local medical societies, before which he frequently read papers that were always listened to with the greatest interest. He always engaged in discussions and contributed great interest to them by his knowledge and wisdom. He had all of the finer feelings and impulses of a

self-reliant man who believed on himself. He was abhorrent of any injustice, often unintentionally done, to young physicians by their seniors in the profession. I have never seen him more excited and indignant than when defending a young physician. He always kept himself in touch with the junior members of the profession. He had the keenest sympathy with them in their early struggles and trials, and always urged upon them never to forget the fact that they should be gentlemen under all circumstances. As he grew older in his profession he was more tolerant and charitable towards the foibles and failures of junior practitioners. He always appreciated keenly the advanced standing obtained by the senior practitioners in medicine, and no one appreciated more than he the difficulties to be overcome to attain distinction. He seemed never to be satisfied with himself, always striving for a higher attainment and a nobler professional standing. One very noticeable trait in his character was his alacrity in defending members of the profession from the assaults of scandal and misrepresentation against them. We always felt that we knew exactly where to find him in times of professional trouble and backbiting. He was always ready to help young physicians, as well as older ones, and was never stampeded by popular clamor and accusation, which is more often wrong than right.

On the 18th of June, 1892, he visited a patient on the North Side, and after leaving the house was overtaken by a rain storm by which his clothes were thoroughly drenched. For several hours he continued to work without changing his attire. In forty-eight hours he developed a universal muscular rheumatism. In another forty-eight hours he developed a peritonitis which proved fatal in six days thereafter.

He was a member of the Chicago Medical Society, of the Chicago Pathological Society, of the Chicago Medico-Legal Society, of the Chicago Gynæcological Society, of the Illinois State Medical Society, of the American Medical Association, and of the International Medical Congress. At the time of his death he was President of the Chicago Gynæcological Society. He was also a member of the staff of the Presbyterian Hospital.

Dr. Knox died in the possession of a simple and sincere belief in the Christian's faith. He was a member in good and regular standing of the Third Presbyterian Church of Chicago. His co-worshipers' confidence in his Christian character was shown by his selection as an Elder in that denomination.

A wife and two young daughters are left to mourn the loss of his wise counsel and tender protection. J. H. E.

The record of the death of Dr. Samuel Mileham is briefly as follows:

Dr. Samuel Mileham was born December 22, 1830, at Chittenden, Grant County, Kentucky. He was the eighth of nine children, four of whom are still living. His boyhood days were passed on a farm, and his early education was obtained at the district school. In 1849 he entered the Baptist College at Covington, Kentucky, and in 1850 he entered the Ohio Medical College at Cincinnati. He had previously read medicine with Drs. Chambers and Evans, two prominent physicians of Covington. He graduated in 1856 and immediately located in Cynthiana, Indiana, and began practicing; but in a few months he returned to Covington and spent several months in a general review of his medical studies at the Ohio Medical College. In 1857 he came to Quincy, Illinois, and after practicing there a short time he located in Camp Point, where he built up a splendid practice.

The Doctor entered the army as a surgeon; his first duties were performed in the Cumberland Field Hospital, three miles from Nashville. He was then ordered to the General Hospital No. 15 in the city, where he remained until the capture of Atlanta, and in the fall of 1865 he returned home and resumed the practice of his profession.

In 1879 the Doctor was elected a representative to the Thirty-fourth General Assembly, on the Democratic ticket, and served with credit to himself and his constituents and was re-elected to the Thirty-fifth General Assembly, running far ahead of his ticket. He was a member of the Adams County Medical Association and the State Medical Society of Illinois.

The Doctor, through his profession and good business management, had accumulated considerable property, owning at his death

about eight hundred acres of land besides valuable city property. The Doctor was twice married, his first wife being Harriet Newell, by whom he had one daughter, Lotta I, wife of Grant Newell, a lawyer of Chicago. His second wife was Martha J. Castle, of Camp Point, Illinois. He has been very successful in his practice and has never refused assistance to any one, whether rich or poor. He was a highly respected citizen and a self-made man.

A. D. B.

The following obituary notice of our ex-president, Dr. David S. Booth, president of this society in 1885, is furnished by Dr. H. R. Guthree, of Sparta:

David S. Booth was born in Philadelphia, June 30, 1828, died September 10, 1892, at Belleville, Illinois, age sixty-four years, two months and ten days. His father, John J. Booth, M.D., was born, educated and practiced medicine in Philadelphia until 1845, when he removed to Fredericktown, Missouri. David was attending the high school when his father left Philadelphia, and he remained to finish his course. After leaving school he was, by the instruction of his father, bound as an apprentice to the drug business for three years, his grandmother Booth and Dr. Hill, an uncle, being his guardians. During the last year of his apprenticeship he attended a partial course of lectures at Jefferson Medical College, attending the lectures on Anatomy, Chemistry and Materia Medica, in place of those in the College of Pharmacy. In the spring of 1849 he came west and commenced systematically the study of medicine under his father. He attended the St. Louis Medical College during the session of 1849 and '50. He taught school part of the time for two years; when not teaching he was pursuing his studies under his father. In January, 1851, he was married to Miss Cynthia Grounds. In 1852 he moved to southwest Missouri, and located first in Jasper county, where he taught school one term and commenced the practice of medicine, then to Newton county, and on petition of the citizens of McDonald county he located at Enterprise, in said county, and remained there until the beginning of the late civil war. He attended the St Louis Medical College during the session of 1858 and 1859, and was graduated M.D. in the spring of 1859.

As he was living in a locality which sympathized with the South, it was uncomfortable for a lover of the old flag; and after the election of Lincoln in 1860 he advertised his property for sale, intending to move to a more congenial locality; but not finding a purchaser and having accumulated considerable property, he did not feel like abandoning it, and remained until the Confederates occupied that locality. As he had acquired considerable local reputation as a surgeon, he received an emphatic intimation that his services were needed and was requested to accompany that division of the Confederate army, which he did, knowing the result of a refusal. He assisted in attending the wounded at and after the battle at Wilson's Creek. After that he returned home and at once prepared for leaving, which he did on horseback at night. He, knowing the by-roads, kept clear of the Confederate army. Under these circumstances he was compelled to leave his family behind.

On arriving at St. Louis, some time in September, he received such a cold reception from a number of his old acquaintances on account of his loyalty that he went on to Philadelphia. He attended the lectures at the University of Pennsylvania until December, when he passed the examination and was commissioned as acting assistant surgeon of the Mississippi Marine Brigade. He entered that arm of the service, hoping before long that he would be able to reach his family. He served on the Monarch, Switzerland, and for a number of months had charge of the floating small-pox hospital. When the Queen of the West was ordered to run by Vicksburg under command of Col. Ellet, he was assigned to duty as medical officer. The Queen passed Vicksburg on the morning of February 2d, 1863, and was captured in Red River on the evening of the 14th, the boat having run aground on a sand bar opposite Fort Taylor, and before she could be gotten off was disabled by the guns of the fort. All the officers except the medical officer and most of the men escaped in small boats and on cotton bales under the cover of night to a prize, the Era No. 2, which was not far distant. The following is copied from Volume 24, 1st Series, of the War of the Rebellion, page 344: "Twenty-four men were taken prisoners, ten of whom were civilians employed on the

boat; Assistant Surgeon Booth was the only commissioned officer captured. Charles Rivers Ellet, commanding Ram Fleet."

A boat was sent back by the commander to take Surgeon Booth to the prize boat; but he would not desert his post, as part of the men who were on the boat were scalded and needed attention.

In a short time after the capture there was an exchange of prisoners, and he and the men who had been with him were sent to New Orleans, and in a few weeks from there to New York, thence to the navy yard at Philadelphia. In August he was ordered to New York to take charge of a train load of exchanged prisoners to St. Louis.

As he could not get any information directly from his family, he offered his resignation and it was accepted after the usual delay. While waiting in St. Louis, endeavoring to obtain an order from the department commander, for an escort from the nearest point where there were Union forces to where his family was located to get them out [there were no regular Confederate forces near; but the country was infested with bushwhackers, which made it unsafe for a Union man to be found alone], a vacancy occurred at the hospital at Springfield, Mo. The medical director, knowing the position that Dr. Booth had held in the Mississippi Marine Brigade, offered him the place. He accepted it, the date of entering this arm of the service being Dec. 11, 1863. Going to Springfield brought him much nearer his family. In a short time after going on duty there, he secured an escort and got his family out after being separated from them more than two years. He held the position until near the first of July, when he resigned and located in Sparta, Illinois, where he remained in active practice until September 1, 1889, when he removed to Belleville, where he died of heart disease, a sequela of rheumatism contracted in line of duty.

The immediate relatives who are left to mourn are the widow, Mrs. Cynthia Booth; one son, David S. Booth, M.D., of St. Louis, Mo.; and three daughters, Mrs. Dr. Jerome Thompson, of Morrisonville, Ill., Mrs. Frances Burnet, of Ottumwa, Iowa, and Mrs. Josephine Sproul, of Sparta.

Dr. Booth was an industrious student, an enthusiast in his profession. He lost no opportunity where he could advance himself.

Attending lectures, either didactic or clinical, or medical societies, were his delight. He was a member and ex-president of the Southern Illinois Medical Association, a member and ex-president of the Illinois State Medical Society, a member of the American Medical Association, a member of the Mississippi Valley Medical Association, a member of the St. Louis Academy of Medicine, and other local societies. He was a member of the Honorary Board of Trustees of the Beaumont Hospital Medical College of St. Louis.

His membership of the different medical societies was not an honorary membership, but he was an active worker in furnishing papers and in oral discussions. His papers all showed labor in their preparation, but with him it was a labor of love. He never failed to respond when appointed on a committee, if in his power, but at once made a syllabus, and as a thought presented itself jotted it down. He usually had his paper prepared weeks before the meeting.

In Dr. Booth's death Southern Illinois has lost one of her brightest lights in the medical profession. His example as a student, his influence on those with whom he was intimate, spurred them to greater diligence, his assistance to students in his office will long be remembered by those who had the benefit of his instruction.

He had a great desire to assist in elevating the medical profession. He, with a friend, were among the first to send a bill to the Legislature to have the standard raised, but it was ahead of the times; it got no further than the committee room. The whole trend of his life was for higher attainment.

Although he paid special attention to surgery, his studies were not confined to that branch of the profession. He believed that a man could not be a good specialist without first being a general practitioner, that the interdependence of the different organs could not be grasped in their entirety from books and teachers, but that personal contact with the sick in all departments was necessary to equip the specialist.

He was positive, not negative, in his belief on religious matters as well as on scientific subjects. He was and had been a member of the Presbyterian Church for a number of years, his belief being that "it was not all of life to live nor of death to die."

H. R. G.

The following notice of the death of Dr. John Stewart Ryburn, of Ottawa, is from the pen of Dr. Wm. O. Ensign, of Rutland:

JOHN STEWART RYBURN, M.D., son of David and Margaret Ryburn, natives of Ayrshire, Scotland, was born at Plainfield, Will County, Ill., May 5, 1852. Having passed through the public schools of his native place, he, for a time, attended the University of Michigan at Ann Arbor. Afterward, and at the age of nineteen years, he entered upon the study of medicine, first, in the office of Dr. A. J. Perkins, of Plainfield, and later with his uncle, the late Dr. R. M. McArthur, of Ottawa, Ill. During this period of office study he attended lectures at Rush Medical College, of Chicago, and graduated with the class of 1876, as its valedictorian.

Returning to Ottawa, he entered upon the practice of his chosen profession in connection with his last preceptor, Dr. McArthur, with whom he continued for several years, or until he subsequently engaged in professional work alone. In the spring of 1889, he was united in marriage to Miss Celia Armour, of La Salle, Ill., who still survives him. Soon after their marriage they visited the British Isles, the early home of his parents, and other foreign places of interest. At a later period, they were in attendance upon the meeting of the International Medical Congress at Berlin, and visited many places of note on the continent of Europe.

Dr. Ryburn was an active member of the Ottawa City Medical Society, La Salle County Medical Society, North Central Illinois Medical Association, and the Illinois State Medical Society. He was also a member of the Independent Order of Odd Fellows and of the Masonic Fraternity, being a Knight Templar.

His death took place at his home in Ottawa, Sept. 21, 1892, after a brief illness, from peritonitis, induced by exposure when his system was previously impaired by overwork. His illness was so short and his death so sudden and unexpected by his friends and neighbors, as to produce a severe shock upon the community in which he resided. Indeed, "he had been at the door of death but a day or two. So short was the period that it seemed to his countless friends that but yesterday he smiled upon them as he passed upon his gentle, kindly way."

As a physician, Dr. Ryburn was peculiarly adapted to his profession, by a nature at once tender and sympathetic, bringing him into close touch with his suffering patient. This, added to an ardent love for his profession, an excellent knowledge of its recent literature, and a thorough and intelligent application of remedies, rendered him skillful in treatment and successful in results. He was a frequent contributor to medical topics presented in the local societies to which he belonged. Respected by his colleagues in the profession, on every hand, and beloved by the people, rich and poor, whom he had served, his death left a most deep and widespread sorrow wherever he was known.

As a citizen, he was a man of unblemished character, liberal in his views, generous and open-hearted in every good and worthy cause, and charitable to the needy poor. Modest and unassuming, he instinctively shrank from public applause or especial notoriety. To know him was to entertain respect for his noble manhood and intuitively become his friend.

His was a noble spirit, honest, earnest, unselfish, sympathetic, gentle and kind. Few pass away leaving behind them such a host of devoted friends or so great a vacancy, as did he, in the community about him or in the profession he had so well loved and honored.

W. O. E.

We have received, in answer to our inquiries, the following brief statement of facts with reference to Dr. Alexander F. Lee, who died at Jacksonville, Ill., Aug. 19, 1892: He was born in Shelbina, Mo., May 31, 1861. He was graduated at Missouri Medical College, March 4, 1884, and practiced medicine for seven years at Quincy, Ill. At the time of his death he was the surgeon of the C., B. & Q. Railroad, and also St. Mary's Hospital. He was a member of the Adams County Medical Society, and of the State Medical Society as well.

Your committee is also advised of the death of Dr. Charles E. Ball, of Breese, March 3d, 1893, but have been unable to obtain the needed facts for a proper statement with reference to his life and death.

Dr. Walter Hay, our former secretary, and formerly Professor in the Chicago Medical College, has also died in his

eastern home during the present year, and the effort will be made to secure a suitable memorial article to be embodied in the next annual report.

If other members of the Society have died since the last annual meeting, the facts have not come to your committee.

ROBERT BOAL,
JOHN H. RAUCH,
JOHN H. HOLLISTER,
Chairman.

On motion the report was referred to the Committee on Publication.

SECTION TWO—THIRD SESSION.

The first paper contributed was by Dr. J. H. Etheridge, of Chicago, entitled, "Split Flap Operation for Perineal Laceration, Complete and Incomplete," which was read in abstract and the operation demonstrated on the blackboard by Dr. Fred. Byron Robinson, of Chicago, in the absence of the author.

Discussed by Drs. Will, Wescott, and Mergler.

Dr. Fred. Byron Robinson, of Chicago, then read a paper entitled "The Causes for the Removal of Abdominal Tumors," and demonstrated his remarks on the blackboard.

Dr. Marie J. Mergler, of Chicago, read a paper on "Indications for the Removal of Uterine Appendages," which was discussed by Drs. Will and Robinson.

Dr. C. Fenger, of Chicago, read a paper entitled "Plastic Operations to Cover Loss of Mucous Surfaces in the Mouth."

SECTION TWO—FOURTH SESSION.

Dr. W. P. Verity, of Chicago, read a paper entitled "Fracture of the Patella and Its Treatment," which was profusely illustrated by cuts.

Dr. F. C. Hotz, of Chicago, read a paper entitled "Early Mastoid Operation in Acute Otitis Media."

Discussed by Dr. Prince.

Dr. John A. Oaks, of Chicago, read a paper on "The Differential Diagnosis and Treatment of Suppuration of the Accessory Cavities of the Nose."

Dr. Frederick C. Schaefer, of Chicago, read a paper on "Perityphlitis."

A paper by Dr. C. W. Hall, of Kewanee, entitled "Burns and their Treatment," was read by Dr. J. H. Coulter, of Chicago, in the absence of the author.

Dr. J. H. Coulter, of Chicago, followed with a paper on "The Deflected Septum and its Repair."

Dr. Boerne Bettman, of Chicago, read a paper on "The Treatment of Blenorrhœa Neonatorum," which was discussed by Drs. Gradle and Coleman.

Dr. Henry Gradle, of Chicago, read a paper on "What benefits can Ear Patients Derive from Nasal Treatment?"

Discussed by Dr. Bettman.

Dr. William H. Wilder, of Chicago, read a paper entitled "Squint and Its Treatment."

SECTION THREE—FIRST SESSION.

In the absence of the regular Chairman, Dr. Richard Dewey, of Kankakee, Dr. O. B. Will, of Peoria, was selected as Chairman of the Section. Secretary, Dr. B. B. Griffith, of Springfield.

Dr. N. S. Davis, Sr., read a paper entitled "The Influence of the Ship Canal now Being Constructed by the Trustees of the Chicago Drainage District on the Sanitary Condition of Chicago and the State of Illinois."

Discussed by Drs. J. H. Hollister, Wm. E. Clark, J. H. Tyler, Dr. Wilcox, J. J. M. Angear, E. Ingals, E. P. Cook, and O. B. Will.

It was moved that the paper of Dr. Davis be published in pamphlet form for general distribution, in addition to its publication in the Transactions of the Society.

Carried.

SECTION THREE—SECOND SESSION.

Dr. Anne McFarland, of Jacksonville, read a paper on "The Lunacy Law of Illinois," which was discussed by Drs. Brower, Earle, and E. F. Ingals.

Dr. Earle moved that the general subject of the lunacy laws of Illinois be referred to the general session for further discussion. Seconded and carried.

THURSDAY—MORNING SESSION.

The general session was called to order by the President at 11.30 A. M.

The President stated that the first thing in order was the Report of the Committee on Nominations.

The Committee asked for further time, which was granted.

Dr. E. P. Cook, of Mendota: I will move a suspension of the regular order of business for the purpose of considering subjects that are of interest to us, some of which are referred to the general session of the Society by Section One. I am aware that it requires a two-thirds vote to suspend the regular order of business, but I am confident the members will be willing for us to present these matters at this time.

Seconded by Dr. Earle and carried.

Dr. Cook: Mr. Chairman—With your permission, and that of the Society, I desire to present a subject that seems to me proper to be considered at this session—a subject upon which we feel that the medical profession is peculiarly qualified to speak, and that the time has come when it is our duty to do so. We claim this body as the representative of the profession of the State of Illinois, a body of men and women who are competent to consider those subjects that relate to the physical and mental well-being of every member of the commonwealth; that by reason of the nature of our position in life's work we are free from political bias and from partisan spirit. I rise to present a subject relating to the care of the unfortunate ones of the State suffering from physical

and mental disability. We feel that they demand the very best skill and qualifications obtainable in our State for their care. Permit me, then, to present the following resolution as expressing the sentiments of the people of the State:

Resolved, That we, the members of the Illinois State Medical Society and Citizens of the State of Illinois, take this occasion to express our earnest conviction that the Superintendents and employes of all of our State institutions should be selected because of individual fitness for the respective places, without regard to their political opinions, and that when so engaged the tenure of their employment should depend only upon the faithful performance of their duties to the State.

The resolution was seconded by Dr. Graham and unanimously adopted.

Dr. Cook: While the regular order of business is suspended, it is quite in order to hear from the Committee appointed to report upon the suggestions contained in the President's address. May that report be made, Mr. President?

The President: I see no reason why the matter may not be disposed of at this time.

Dr. Sanger Brown, Chairman of the Committee, said that there were some nine suggestions contained in the President's Address, and it would be desirable for the Society to act on them separately. The Society had already acted upon part of the report by adopting the resolution of Dr. Cook under the head of Charitable Institutions. There were only three other headings that the Committee had attempted to deal with in a definite manner. The first suggestion contained in the President's address, namely, the means of increasing membership and the unification of the profession, the Committee approved, and it may or may not require definite action of the Society.

Your Committee did not take any special definite action in regard to State Sanitation, because we thought it was comprised in the resolution regarding a National Department of Public Health, which is as follows:

"That we believe, that the sanitary interests of the people of the United States can best be served through a Department of Public Health, with an enlightened and responsible head, and that we as an organization and in our individual capacity will, at all times, use all proper means in our power to cause Congress to enact a suitable law or laws for the accomplishment of this object."

Education of the Public by Circular.—While we did not prepare a resolution in regard to this suggestion of the President, we agreed upon this general plan for this year, that a committee of three be appointed to prepare circulars for dissemination among the public upon topics that will benefit them.

Method of Appointing Committee on Legislation.—As was ably set forth in the President's Address, your Committee recommends that men be secured who are acquainted with practical politics in a legitimate way, and as those are qualifications that are somewhat special, it is suggested that a better selection is likely to be made by the Executive Committee than by the whole body in session, for the reason that complimentary feelings of gallantry or good-will are liable to control the matter, whereas if it is left to the Executive Committee they are very apt to know and to select men who have a special fitness for this work.

Aid to Medical Libraries.—We all agree that it is a proper thing for this Society to foster Medical Libraries by every legitimate means. Your Committee concurs with all the suggestions contained in the President's address, but the most definite feature of our report is in regard to medical legislation, which is as follows :

WHEREAS, It is highly desirable that there should be the utmost uniformity in the qualifications of practitioners of medicine through this State, and

WHEREAS, This Association is the most thoroughly representative of any body of Physicians in the State, and therefore the body which should most properly see to it that the requirements are proper and uniform, and

WHEREAS, In order to secure uniformity and the proper standard of requirements, provision must be made for all students to pass the same examinations at the same time, and

WHEREAS, To effect this the active and earnest co-operation of a considerable number of the members of this Society having special fitness for the task is necessary; therefore, be it

Resolved, That this Society at this time take action looking to the formation from its own membership of a College of Examiners, which shall determine as to the fitness of each and every person who may apply for a license to practice medicine within this State, and in order to organize such a college,

Resolved, That a Committee on Organization be appointed with power to act for the purpose of drafting a constitution and by-laws, obtaining a charter, and preparing a bill for the Legislature if legislation should be deemed necessary, and that said Committee report at the next annual meeting of this Association; and further,

Resolved, that said Committee on Organization be constituted as follows: Every Medical College throughout the State in good standing, may have three representatives, and every Association tributary to this one may have one representative for every fifty or fraction thereof of its membership, and

Resolved, That this Association do now elect a Chairman of this said Committee on Organization, whose duty shall be to complete the Committee by requesting the several bodies named above to appoint representatives to serve upon it.

Resolved, That no person shall serve on said Committee on Organization who is not a member of this Association in good standing.

DR. COOK: The matters that the Committee have considered are very important, and if possible should be printed, so that the members can consider them at leisure, and definite action can be taken in a year from this time. I move that the Secretary of the Society be instructed to have the essential part of this report printed and transmitted to the members for their consideration, and that the subject be brought up one year from this time.

Seconded by Dr. Earle, and carried.

Dr. Cook: Under this order, Mr. President, will it not be proper to consider the report of the Committee on the Lunacy Law now pending in the State? I think it is in order to do so.

The President: I think it would be well first to select a Chairman for the Committee mentioned in the resolutions, so that some work might be done during the year.

Dr. Brown: We can gain a year's time by electing a Chairman of the Committee. The Society would be committed to nothing by the development of this Committee on Organization, which would bring forward next year a report, and if the Society did not approve of it, the College of Examiners would not be formed. We would certainly save a year's time by appointing a Chairman and allowing him to develop this idea.

Dr. Graham: I move that Dr. Sanger Brown be appointed a Committee of one on the resolutions that have been read, and that he, in connection with the Executive Committee and Publication Committee, work out such recommendations as they deem necessary.

Seconded.

Dr. N. S. Davis, Jr.: Does this mean the organization of a College of Medical Examiners now?

Dr. Sanger Brown: No. We simply desire to communicate with the different medical colleges and representative men from the different local medical societies throughout the States and feel their pulse in this matter, getting their views with a view to submitting a report next year.

The motion was carried.

The President: The report of the Committee on the Lunacy Law, referred from Section One to the general session, and brought up by Dr. Cook a short time ago, is now in order.

Dr. Brower: I understand that Dr. Brooks, of Elgin, is present, who has recently been in Springfield, and he can

tell us how far the bill has advanced which is now before the Legislature.

Dr. H. J. Brooks: The bill has been ordered to a third reading in the House. I have not kept close track of the Legislative proceedings this week. It has also been ordered to a second reading in the Senate, with the recommendation that "it be passed." Many of the Legislators of both Houses look upon the bill with considerable favor. There are a number of quite prominent lawyers who are opposed to it and are inclined to fight it. Some of these lawyers were asked to read the bill and reprint, and since they have done so they are in favor of it. I believe, if the influence of each member of this Society were brought to bear on the representative in his neighborhood, that he would consider it favorably.

Dr. Earle: What would you suggest?

Dr. Brooks: I would suggest that the Society bring some action to bear on its individual members throughout the State, and by personal endeavor try to influence the members of the Legislature of both Houses.

Dr. Graham: I have a motion to make. We have a Committee on this work, and the Chairman of the new Committee will be Dr. A. B. Strong, who is present. He will take a deep interest in this matter and will push it with energy. These remarks will help him to get at the weak points of the opposition, to know exactly where work ought to be done. I therefore move that the new Committee be instructed to take measures to bring all the influence to bear in their power in getting such assistance as they can from the members of the Society, and that the Committee be authorized to draw on the Treasurer of the Society to the extent of $200 for expenses.

Seconded by Dr. Brower, and carried.

Dr. Cook: I verily believe, Mr. President, that if the members of this Society, who are in real earnest, will send as soon as they return home, a telegram to each of their representatives in the Legislature, and then write them a personal

letter, soliciting their influence to secure that law, it can be done at this session. I am told that the number of the House Bill is 360, and in the Senate 366. It is called "The Lunacy Commitment Bill." To test the interest of the members in this matter, I will ask the President to request all those to stand up who will pledge themselves within the next ten days, to communicate with their representatives both by telegrams and personal communications.

The President did so, and every member arose.

The motion was then put and carried.

Dr. Graham: I move that the Secretary be instructed to send a reprinted copy of Dr. Cook's resolution to the Governor of the State, prominent members of the Legislature, newspapers, and medical journals.

Seconded by Dr. Earle, and carried.

Dr. Sanger Brown: While we are disposing definitely of the report of the Committee appointed to report upon the suggestions made by the President in his address, I move that a Committee be appointed also to draft circulars for the instruction of the public, and that the President, Dr. Ingals, be made Chairman of that Committee.

Seconded and carried.

The President called for the report of the Committee on Biography, Dr. J. L. White, of Bloomington, Chairman. No report.

The Auditing Committee, through its Chairman, Dr. O. B. Will, of Peoria, reported having examined the accounts of the Secretary and Treasurer and found them correct.

On motion of Dr. Graham, the report was adopted and referred to the Committee on Publication.

The Report of the Committee on Nominations was then read by the Chairman, Dr. L. A. Malone, of Jacksonville, as follows:

Your Committee on Nominations would respectfully submit the following report: We nominate for

President—O. B. WILL, Peoria.

First Vice President—D. R. BROWER, Chicago.

Second Vice President—ABBY F. ROONEY, Quincy.

Permanent Secretary—JOHN B. HAMILTON, Chicago.

Assistant Secretary—E. J. BROWN, Decatur.

Treasurer—G. N. KREIDER, Springfield.

Judicial Council—E. INGALS, Chicago; C. B. JOHNSON, Champaign, and W. J. CHENOWETH, Decatur.

SECTION I.—*Chairman*—T. J. PITNER, Jacksonville.
Secretary—H. MCKENNAN, Paris.

SECTION II.—*Chairman*—D. W. GRAHAM, Chicago.
Secretary—ELLEN H. HEISE, Canton.

SECTION III.—*Chairman*—G. W. WEBSTER, Chicago.
Secretary—G. A. ZELLER, Peoria.

STANDING COMMITTEES.

COMMITTEE ON LEGISLATION.

A. B. STRONG, Chicago; WALTER WATSON, Mt. Vernon; B. M. GRIFFITH, Springfield.

COMMITTEE ON NECROLOGY AND BIOGRAPHY.

J. H. HOLLISTER, Chicago; ROBERT BOAL, Peoria; JOHN H. RAUCH, Chicago.

COMMITTEE ON MEDICAL SOCIETIES.

WM. O. ENSIGN, Rutland; JAMES L. REAT, Tuscola; CHAS. W. HALL, Kewanee.

COMMITTEE OF ARRANGEMENTS.

C. CHENOWETH, H. C. JONES, E. J. BROWN, W. M. CATTO, WILLIAM BARNES.

Place of Meeting—Decatur.

Your Committee also recommend that for the coming year the Society delegates to the officers of the several Sections the duty of selecting a speaker to present the General Address in each Section.

Your Committee would also recommend that D. W. Graham be appointed a special Committee to complete for the Society a file of the Transactions. Respectfully submitted,

L. A. MALONE, Chairman.
K. MILLER, Secretary.

On motion of Dr. H. N. Moyer, the report of the Committee was adopted.

The Secretary read telegrams from the Iowa State Medical Society in session at Burlington, and the Pennsylvania State Medical Society in session at Williamsport, extending greetings and good will, and said he had appropriately answered the messages.

Dr. D. R. Brower offered the following resolution :

Resolved, That this Society tenders to Dr. D. W. Graham, the retiring Permanent Secretary, its sincere thanks for his faithful and self-sacrificing labors of the past seven years ; and be it further

Resolved, that in grateful recognition of his services, the Secretary furnish Dr. Graham an engrossed copy of this resolution duly attested by the proper officers of the Society.

Seconded by Dr. Earle, and carried.

Dr. C. W. Earle offered the following :

Resolved, That the thanks of the Society are hereby tendered to Dr. and Mrs. D. R. Brower, for the gracious welcome extended by them to the Society on Wednesday evening.

Seconded and carried.

Dr. E. P. Cook introduced the following resolution :

Resolved, That the thanks of the Society are hereby tendered to Dr. J. B. McFatrich and the Masonic Temple Company, for many courtesies extended in furnishing extra rooms for the use of Committees, and for securing at reasonable rates the beautiful halls used by the Society at the present annual meeting.

Seconded and carried.

Dr. A. E. Prince, of Jacksonville, offered the following, which was adopted:

Resolved, That the Society express its thanks to President Ingals and to the officers of the respective Sections for the prompt and efficient manner in which they have discharged their duties ; also to the Press for reports of the proceedings.

Dr. Graham : I do not think it is necessary for the Society to go to the expense of having an engrossed copy of the resolution regarding myself. An attested copy by my

successor, which will not cost anything, will be sufficient. In this connection I desire to thank the members of the Society for their courtesy and co-operation during the seven years I have served. While the position of Permanent Secretary is not a very desirable one to fill and often a difficult one, requiring much time, yet there are many sources of pleasure in it, and I am sure that the majority of the members have always co-operated to the fullest extent of their information and ability.

I now take pleasure in introducing my successor, Dr. Hamilton, of Chicago, who has not been with us much in late years and whose face is strange to many of you, having been absent from the State on public business, but who has had a continuous membership in this Society for twenty-four years.

Dr. J. B. Hamilton: It is hardly necessary for me to speak at length at this time. I feel that I shall have to depend on Dr. Graham many times in the next few months. I thank you very much for the compliment bestowed, and while I appreciate the responsibility of the position, I shall expect the forbearance of the Society for any defects that are seen in the work, and I trust their co-operation will make it as easy as possible.

Dr. Graham: I desire to say that Dr. Coulter has worked very hard and efficiently during the year to make the Forty-third Annual Meeting a success; in fact, he has done nearly all the work of the Committee of Arrangements, although I do not mean to reflect upon the other members of the Committee. He is therefore entitled to a vote of thanks.

Dr. E. Ingals: I move that a vote of thanks be extended to Dr. Coulter for the efficient work he has done during the year.

Seconded by Dr. Cook.

The motion was then put by the Chair and carried unanimously.

Under the head of Reports of Special Committees, Secretary Graham read the Report of the Special Committee

on Report of Committee on Medical Societies, in the absence of the Chairman, Dr. Ensign, as follows:

Your Committee to whom was referred the recommendations of the report on Medical Societies, have carefully considered the same and would beg to report that they do not now recommend any change in the Constitution and By-laws, but would advise that the report be adopted as a judicial exposition of the question of membership and eligibility of societies to membership, and as our official list of societies now eligible, and would recommend that the several societies be hereby requested to make their requirements conform to the same. By vote of a majority of the Committee.

WILLIAM O. ENSIGN, Chairman.

Dr. E. Ingals moved the adoption of the report.

Dr. Coulter asked the Secretary to re-read the report, which the Secretary did, and said that it simply confirmed and adopted the report of the Committee on Medical Societies.

The Chair then put the motion, and the report was adopted.

DR. E. INGALS: As Chairman of the Committee of Arrangements, I have a short final report to make. The entire expense of the meeting has been $175. We have received from exhibitors $144.25, leaving $30.75 to be paid out of the Treasury to cover the expenses of the meeting.

Secretary Graham moved the adoption of the report, and that the Committee draw on the Treasurer for the amount named.

Seconded and carried.

The following papers were read in abstract, and on motion referred to the Committee on Publication:

"Neurasthenia," by Dr. Harold N. Moyer, Chicago.

"Consumption Primarily a Nervous Disease," by J. J. M. Angear, Chicago.

"Oil of Cassia as an Antiseptic," by Dr. C. E. Black, Jacksonville.

"A Case of Erysipelas, in an Infant, Involving the Entire Body Excepting the Hands and Feet," by Dr. J. J. Alderson, Chicago.

"The Diagnosis and Treatment of Otitic Brain Abscess," by A. L. Adams, Jacksonville.

"The Superiority of Sterilized Cow's Milk as an Artificial Food for Infants," by C. W. Earle, Chicago.

Secretary Graham read the following resolutions from the Permanent Secretary of the Pennsylvania State Medical Society, and moved their adoption:

Resolved, That the Medical Society of the State of Pennsylvania hereby expresses its highest disapprobation of the practice of giving certificates or testimonials to *secret* preparations alleged to be of medicinal virtue, and calls the attention of the affiliated County societies to the fact that such action on the part of members of the said societies is in derogation of the dignity of the profession, and in violation of the letter and the spirit of the Code of Ethics of the American Medical Association and of this Society.

Resolved, That this Society likewise expresses its disapprobation of the practice of inserting advertisements of secret preparations in the columns of medical journals, such action being an insult to the intelligence of the profession, and a degradation of journals indulging therein to the level of the patent-medicine almanac. Especially to be condemned is the action of the *Journal of the American Medical Association* in admitting such advertisements.

Resolved, That copies of these resolutions, duly attested by the Permanent Secretary, be sent to all County Societies in affiliation with this Society, to the American Medical Association, to State Medical Societies in affiliation therewith, and to the publishers and editors of American medical journals.

WILLIAM B. ATKINSON,
Permanent Secretary.

Seconded by Dr. E. Ingals.

DR. HAMILTON: Before adopting the resolutions which have been read by the Secretary, censuring the Board of Trustees of the American Medical Association, I desire to

make a statement of facts in the case. In the first place, there are no proprietary medicines advertised in the Journal of the American Medical Association, or secret preparations, unless the formulæ have first been submitted to the Trustees. I would rather have these resolutions received and referred to a proper Committee for investigation than to adopt them at this time. As member of the Board of Trustees of the Journal, I will say that we have discussed the matter in the Association and out of it, and it has been referred to different Committees. We required the formula of every medicine about which we had any doubt, to be submitted under sworn statement. Dr. Shoemaker is at present Chairman of the Committee on Advertising in connection with the Board of Trustees of the Journal. The members of the Committee are members of different State Societies, and the question of advertising certain preparations in the Journal was submitted to them, and the resolution adopted involved "Listerine" and other preparations. When you come to a full consideration of the origin of the resolutions, where they emanated, and what they mean, there will be a flood of light thrown on the subject. I therefore move, as an amendment, that these resolutions be received and referred to a Committee for investigation before the Society acts on them. One other point; these resolutions are what would be considered in newspaper circles as "back numbers," as they have already been presented to the American Medical Association and there acted upon.

Seconded.

Dr. Graham accepted the amendment, and in explanation stated that the resolutions were dated May, 1892, and were intended for our last annual meeting, but were not received until after that meeting had adjourned. He had presented them now, after consultation with the President and one or two others.

The motion was carried.

The President appointed on the Committee Drs. J. B. Hamilton, E. Ingals and Henry P. Newman.

Secretary Graham moved that the Permanent Secretary be authorized hereafter to draw upon the Treasurer to the extent of $200 annually as an honorarium. He said heretofore it had been the custom to draw on the Treasurer for $100 only.

Seconded and carried.

Dr. E. Ingals moved that Dr. Ensign be appointed a special Committee on the History of the State Medical Society, with instructions to report at the next annual meeting, so that it could go in the transactions of next year.

Dr. Graham suggested, as an amendment, that the Committee on Medical Societies do it, inasmuch as Dr. Ensign was the Chairman of that Committee.

Dr. Ingals said that it was all right if the matter was entrusted to Dr. Ensign. He accepted the amendment, and the motion was put and carried.

The following members were appointed delegates to the American Medical Association :

Frank Billings, Chicago.
J. D. Colt, Litchfield.
N. S. Davis, Chicago.
C. W. Earle, Chicago.
D. W. Graham, Chicago.
John B. Hamilton, Chicago.
John H. Hollister, Chicago.
E. Ingals, Chicago.
E. F. Ingals, Chicago.
Geo. N. Kreider, Springfield.
M. M. Leahy, Chicago.
John L. Marshall, Chicago.
D. T. Nelson, Chicago.
G. W. Nesbitt, Sycamore.
F. P. Norbury, Jacksonville.
J. F. Percy, Galesburg.
E. S. Pettyjohn.
Wm. E. Quine, Chicago.
John H. Rauch, Chicago.
G. F. Schreiber, Maywood.
Horace M. Starkey, Chicago.
Nicholas Senn, Chicago.
H. B. Stehman, Chicago.
A. K. Van Horne, Jerseyville.
W. H. Veach, Carthage.
Geo. W. Webster, Chicago.
Cassius D. Wescott, Chicago.

During the meeting the following were made invited guests with invitation to participate in the scientific business of the Society : Drs. Simon Baruch, New York ; F. C. Curtis, Albany, N. Y., Secretary of the N. Y. State Medical

Society; T. B. Ellis, Bethany, Md.; C. S. Schaefer, Wisconsin; F. G. Fowler, Kentucky, and W. R. Cisna, of Pennsylvania.

President Ingals appointed Drs. William E. Quine and Elbert Wing to escort the newly-elected President to the chair.

President Ingals said: Members of the Society—Before introducing my successor, I wish to congratulate the Society upon the good attendance at this meeting and the unusually large registration. The Treasurer informs me that practically 450 members have registered this year. In any previous year not more than about 250 had registered. I want personally to congratulate the Society upon the efficient and prompt action taken during the sessions by the Chairman of the Committees and of the Sections. It became necessary to rush the work, and I have been told that a few of the members felt that they had not been properly dealt with. It seemed a little arbitrary to shut off discussion or to hurry the reading of papers, but it was necessary, however, and I believe the members will consider it so if they think of the matter. I desire also to thank the Society for the uniform courtesy extended to all of the officers. I now take great pleasure in introducing to you your new President, Dr. O. B. Will, of Peoria.

Dr. Will said: The hour is late, and I wish simply to thank the Society cordially for the high honor conferred upon me, and to assure you that I shall perform the duties of my office to the best of my ability during the ensuing year.

There being no further business, the Society, on motion, adjourned to meet in Decatur the third Tuesday in May, 1894.

JOHN B. HAMILTON,
Permanent Secretary.

ADDRESS OF THE PRESIDENT.

E. FLETCHER INGALS, A.M., M.D.

Fellows of the Illinois State Medical Society, Disciples of Æsculapius, and Patrons of Medical Science:

In calling to order the Forty-Third Annual Session of the Illinois State Medical Society, I wish to express my high appreciation of the honor you have conferred upon me in making me your presiding officer; for, as no political honors, in my mind, compare with those bestowed by a representative body of a noble profession, so nothing is more gratifying to me than the good will of my peers.

I congratulate you upon the auspicious circumstances under which we have met to-day on the four hundredth anniversary of the discovery of America.

Our history as a Society covers more than one-tenth of the time which has elapsed since that eventful day, and about one-sixth of the time since the landing on Plymouth Rock. Some of our early accoucheurs were doubtless present at the birth of this nation, and some of those now with us can remember when the barbarian's camp-fire illumined the very spot where we are now lighting the torch of science. During these years this Association has filled well its place, and its tireless members have kept in the van of those whose labors have developed the science of to-day.

I wish to thank the Chairmen and the Secretaries of the three sections for their diligence in securing interesting papers for this meeting, and also to acknowledge my obligation to all of the officers of the Society for their hearty co-operation in the work of the past year. How well our

work has been done will be better known when our task is completed day after to-morrow; but we fondly hope the results may justify our labors and make this meeting fully as valuable as those that have preceded it. The Chairmen of all our standing Committees have been diligent during the year and will have something of interest to say to you before the meeting closes; but you will be specially interested in the reports of the Committee on Medical Societies, and on legislation, whose work is of the greatest importance to this Society and the profession at large.

At this time I wish especially to direct your attention to the opportunities and responsibilities of this Society for the future.

To-day our list of members is composed of the most representative physicians of the State, and we have at this meeting an attendance unequaled in our history. Yet there are others whom we must awaken to a realization of the fact that every intelligent regular physician in the State owes something to the profession and to our great commonwealth, which can best be paid through this Association and its affiliated societies.

There are now in this State a little less than 5,500 regular physicians, of whom about 4,900 are from necessity, or some less laudable reasons, attending solely to their own interests, and doing little if anything for any one but themselves and their immediate patients. Some of them are doing all they can and will finally rest in honored but unknown graves; but there are many others who if brought under your influence, might add something to the general fund of information, which, even though little, might bless mankind. These often say they can furnish nothing of interest to the profession, as they are only plain country doctors, whose days and nights have been spent upon the bleak prairies, in wearisome waiting and tedious travel, with none of the stimulation born of contact with others interested

in the same work, and no respite from the slavery of endless toil and anxiety; but they are wrong!

I often meet the self-styled plain country doctor, and I always find in him something to respect and honor, and I seldom leave a consultation with one of them without having gleaned something from his fund of experience suggestive of the rich store from which much might be drawn, if he were only more nearly associated with his brothers in the profession. Of the 5,500 regular physicians in this State, there are about 1,800 more or less interested in societies, who at times contribute by their presence, or pens, to the advancement of medical science. All of these ought to belong to this Society, where they might at least become acquainted with each other. We cannot hope for active co-operation in the scientific work of the profession from many of its members; therefore the physicians of the State may well feel proud of their 560 representatives who are now enrolled as members of the State Society; for in no walk of life, and in no organization can a larger percentage of public spirited men and women be found.

Increased Membership.— Believing that for carrying out many of our most important measures, strength lies in numbers, your officers have during the past year, endeavored to interest in this Society all the eligible physicians they could reach. We have added 125 names to our rolls and we feel confident that if each member will aid in this effort through local societies, and by urging the importance of a great State organization upon his immediate professional friends, the task will quickly be accomplished. If each of you would secure one or two members, we would have one of the largest and most effective societies in the country. With this object in view, each member should make it his especial business to foster and encourage local societies, and finally to bring their members into the State organization.

By virtue of an early act of the State legislature, the

Massachusetts State Medical Society occupies a relation to the physicians in the State somewhat like that of our State Board of Health as a licensing body, and as a result, practically all of the reputable physicians in the State are members of the State Society. The attendance at their annual meetings is so general that a few years ago when I was invited to one of their meetings I found about 2,500 members present.

The plan of organization in Massachusetts is attended with many advantages, but is not practicable in this State at present.

In Indiana, the State Medical Society has been made to embrace all members of local societies, whether or not such members are interested in the State organization, or even in their own society. This arrangement gives the State Society of Indiana nominally about 1,500 members, and at first sight it seems desirable; but when we reflect that members of an organization who have little interest in it are often worse than none, the advantages of the arrangement appear questionable.

The committee that recently revised our constitution, considered carefully the organization of the Society in our sister State, but came to the conclusion that it was not fully adapted to our needs.

Their action seems to have been wise, for under our new constitution we are enabled to bring all the valuable members of local societies into this organization, which will be more effective with 800 or 1,000 active members, than with three times as many, indifferent to our aims.

It appears to me that our first effort should be unification of the profession by drawing into this organization as many as possible of the reputable physicians throughout the State, thereby broadening our influence, and materially advancing our social and professional interests. It is of vast importance that we should act together. It is human nature to look upon a stranger with indifference, but to count an acquaintance

as a friend whose defects we can excuse, and whose virtues we admire.

Preliminary Registration.— It is believed that the method adopted this year of registering by mail, before the Annual Meeting, will greatly facilitate the work of the Society; that it will secure an accurate and thorough distribution of the volume of transactions, and prevent the dropping of valuable names from our rolls. I hope each member of our Society will in future, on receiving notice from the Treasurer, respond at once, and register, whether he expects to be present or not. I am sure this will save annoyance and give us much more satisfactory meetings. Each will then come to the annual meeting feeling that he individually owns a valuable interest in the organization, and not that the gathering is merely a literary entertainment, for which he must purchase a ticket of admission.

Charitable Institutions.— In the past this Society has stood for good government, and the interests of the unfortunate, on all questions pertaining to our hospitals, the asylums for the insane and feeble minded, the schools for the deaf and dumb, and all other public charities. Our work in this direction has often ended in disappointment, but our sympathies have not grown cold, and despite reverses our efforts have been continued.

After twenty-four years of labor in the interest of one of the most vital questions regarding the welfare of the insane, it was thought a few weeks ago that we would this year surely secure a change in the barbarous laws for their commitment that would relieve this unfortunate class from the treatment accorded common criminals to which they are now subjected, while at the same time the revised law would carefully protect their rights as citizens.

The law, however, has not yet been passed, and it is probable that it will not be at this session of the legislature.

Our efforts must be continued for this and other needed

legislation; wrongs cannot be righted without the most persistent effort, and constant vigilance will be required to maintain whatever may be secured.

In the management of our public institutions, change of those placed in charge for political reasons, is in principle wrong and in practice vicious. It is an insult to the whole profession and an outrage on humanity, and some means should be found to prevent it. The medical profession is earnestly desirous of obtaining the most competent persons for the care of the unfortunate inmates of our hospitals and other charitable institutions; to do this we must collectively and individually work for some plan that will remove, not only the State, but the local institutions of this class, from the domain of party politics. The only way we can succeed in this is to convince politicians that by pursuing their present wanton policy they will lose more votes from the profession and friends of humanity that they can gain from petty politicians. Unfortunately those who work for the benefit of others must often sacrifice their own interests, and they necessarily lack the incentives of those whose aims are purely selfish; therefore we have great odds against us, and it is only by concerted and persistent action among ourselves, directed by some one familiar with the manner of obtaining proper legislation, and by placing the matter before our friends outside the profession, that we can hope to rescue these institutions from the rapacity of professional politicians.

Sanitary Matters.—The people look to sanitary science for the prevention of many diseases; but often inefficient or even injurious methods are adopted, especially by the laity. Physicians, who are even more anxious than the laity to prevent disease, must direct the efforts of the people for this purpose, to make them efficient, and in times of danger, it is of the utmost importance that the medical profession should speak authoritatively on these subjects, and that in every community there should be representatives of this body who

will instruct those about them in the best methods for preventing sickness. The sanitary condition of our State, of our cities and towns, and the homes of our patients is a subject of vital interest, demanding our individual attention, and one that should receive our collective consideration.

A short time since, a meeting to which the members of the State Society and the Chicago Medical Society were specially invited was held in this city under the auspices of the Practitioners' Club, to consider the sanitary condition of our State and the means which were at our command for preventing the introduction or propagation of cholera, by which we were then threatened. This meeting was notable for the large number of prominent physicians who were present, for the able papers presented, and for the intelligence with which they were discussed. One incident, however, illustrated with peculiar force the apathy shown by our health officers at that time, on a subject of such vital importance to the city, *viz.:*—not a single representative of the State or City health departments was present at the meeting. Why were they absent?

The Interest of the Public in Professional Matters. —The need of concerted action for the purpose of securing the public against the impositions of ignorant and dishonest persons claiming to be physicians and perhaps holding authority from our State to practice, has ever been before us and may always remain, for nothing we can do will protect the community entirely from this dangerous class of persons, and no legislation can remove the superstition and gullibility of a large part of the community on medical subjects; but this Society may from time to time secure improvements in legislation, and may do much to educate the people for their physical well-being.

Circulars of Information.—In this connection I believe it would be advantageous if the Committee on Medical Societies should be intrusted with the preparation, from time to

time, of circulars of information, bearing the stamp of this organization, which should be published by the Publication Committee and furnished by the Secretary to all members who would mail them to their patrons.

Physicians soon learn the uselessness of preaching or lecturing upon the perniciousness and folly of encouraging quackery, and the use of nostrums, manufactured for the same purpose as the soft iron razors we read of in our boyhood; but I think many of this Society would be glad to mail to their friends and patrons two or three times a year, circular letters from this Society, with instructions in hygiene, sanitary precautions, warnings against charlatans, and exposures of worthless or noxious nostrums.

The Committee should solicit information from all members of the Society, and prepare three or four times a year, neat circulars of information on these and kindred subjects, which should be issued by the Secretary, and sent to all members of the Society, each of whom should be furnished gratuitously with as many copies as he would agree to distribute. By this plan judiciously pursued, all of our families might be educated for their own protection, and so that they would lend their influence to the beneficent aims of the profession. The expenses of this work for stationery, postage and printing, should, of course, be paid by the Society.

Committee on Legislation.— With no disparagement of former Committees whose delayed success has been due to methods rather than men; and with nothing but praise for the earnest efforts of our present Committee on Legislation, I wish to suggest what appears a desirable change in the appointment of the members of this committee; but more especially to urge a much needed change in the tactics that have been employed. In place of our present method of electing members of the Committee on Legislation, I believe it would be better if the Executive Committee should make the appointments, being careful to select for members of that

Committee, those willing to serve, competent to advise, and with knowledge and will to act, in order that the most efficient persons be secured and retained. Our present plan often places upon this committee members skilled in all the arts and science of medicine, but knowing little of the methods necessary for developing and using public opinion, or for securing the attention of law-makers. Such a committee, however earnest in its efforts, cannot succeed.

The fate of the needed measures which we have endeavored for years to secure, illustrates the necessity for a different course; and the comparatively prompt passage of the Anatomical Act, which was secured a few years ago by a few energetic men working in a systematic way, shows what might be accomplished. I am assured that by the systematic course pursued in securing the anatomical act any reasonable bill could be passed; but it would require a great deal of time, and some money. The time would be freely given, the money should be furnished by the Society. The expense for each bill would probably amount to about two dollars from each of our members, to pay the necessary clerk hire and postage. I am informed that in securing the bill just referred to, the Committee sent out 87,000 pieces of paper, including envelopes and enclosures, probably amounting to 35,000 letters, by which the support of four-fifths of the physicians in the State was obtained, and through them practically all of the legislature. Yet even then, and although the bill finally went through with an overwhelming majority, it would have been pigeon-holed and lost, had not Dr. Strong been on hand at the closing of the session to see that it was brought to third reading. Our present bill on the commitment of the insane, though favorably received by the legislature, will probably fail in the last days of the session by not coming to a vote, unless the most energetic measures are adopted at once.

A National Department of Public Health.— At the last annual meeting my predecessor said to this Society, "A most pressing need of our country has been, and is to-day, a Department of Public Health. The medical profession throughout the United States through its journals, by resolutions adopted by the American Medical Association, and through committees sent to Washington, have time and again urged its importance upon Congress, but without success." This pressing need still remains, and it becomes our duty not merely to pass resolutions on the subject, but to make individual efforts for its accomplishment. This work also should be directed by the Committee on Legislation, who should, if necessary by repeated letters, assure themselves that every member has done his part to attain the desired result. I need only to repeat one of the arguments made by Dr. Hunt in the address just quoted, to demonstrate the importance and feasibility of a National Department of Health. We have a Department of Agriculture of recent origin, which has proven of inestimable good to the country in the progress made in the science of Agriculture, and in the care and protection of the health and lives of plants and domestic animals. There is maintained and endowed with adequate appropriations by Congress, a Bureau of Animal Industry; with appliances and laboratories, in which are employed well paid pathologists, microscopists, and veterinarians for the study of animal pathology, and the investigation of means for the prevention and cure of disease in the lower animals. Surely the human animal should be of at least as much concern to the government. I hope that you will adopt suitable resolutions and instruct your committee on legislation, to take the necessary measures to insure prompt, persistent, and repeated action by individual members, to keep this before the Congressmen and Senators from this State.

Aid to Medical Libraries.— It has long been an effort of our profession to provide ample public medical libraries,

where the collected treasures of past investigation and experience may be easily accessible to all. In furtherance of this commendable purpose the profession of Illinois has shown a wise forethought. A good deal had already been done in this line by securing a number of small public collections of medical literature, when with an intelligent liberality that reflects great honor upon them, the trustees of the Newberry Library established a Medical Department on a scale commensurate with the importance of the beneficent work it was designed to foster. This library will become one of the most complete and extensive in the world, and will stand for all time a conspicuous monument to the memory of its generous founder, the late Walter L. Newberry, of this city. The trustees of this magnificent library cannot be too highly honored for the wisdom they have shown in thus strengthening the foundation for the relief of suffering mankind. Nothing brings to men so much sorrow as sickness, and at such times none can comfort and relieve like the educated and skillful physician. In this library all the books we need will be provided, if we intelligently ask for them. I am informed by Dr. G. E. Wire, Superintendent of the Medical Department, that there are already in the library thousands of unbound monographs and pamphlets too numerous to number, and over ten thousand bound volumes; and that upon their tables are constantly placed the copies of 363 serials, including all the valuable medical journals in the world. One third of the sets of these serials are practically complete and the remainder are ordered. These books are all classified and catalogued so that they may be readily consulted. In order to preserve the integrity of the library, books are not allowed to be taken from the building, but they are open to the profession every day from 9 A. M. to 10 P. M., Sundays excepted.

I hope that all of you will take the opportunity of visiting the temporary quarters of this great library, corner of Oak

and North State Streets, and of viewing its magnificent new building near by, which is now nearing completion.

Do not forget that every one of you may do something to aid in this grand undertaking by donating all pamphlets, odd numbers of serials and old medical books, that you no longer want. Any of you, whether old or young, who have not a son or daughter following in your footsteps, should see to it that your medical libraries, whether large or small, are given to this or some kindred collection as soon as your use for them shall cease. The library will pay transportation charges on all packages from out of town, or will call for those in the city, and will be glad to receive them; as duplicates can often be exchanged advantageously with other libraries.

Medical Education.—One of the fundamental objects of this Society is the promotion of more thorough medical education.

Realizing the great advances made within the past few years by our foremost colleges in their requirements for graduation, we have little to ask of them in this direction; but we may individually do much to assist them in this work. The State law now demands four years of study, to which those engaged in teaching heartily agree; and the principal colleges have lengthened their three obligatory courses to seven or eight months each, and one now requires of all new students that four lecture courses shall be taken before graduation. While these colleges are thus raising the standard, there are many in the country maintaining short and inefficient courses, calculated to debase the profession, or at least hinder its advance. As nearly all the colleges in the country are dependent upon the tuition fees for running expenses, the members of this Society and the profession of the State should aid in the movement by encouraging students to attend only those colleges that have shown themselves determined to work for the benefit of the profession and society. We should see to it that wherever we have influence,

young men intending to enter the profession of medicine should first acquire a thorough preliminary education. It is hoped that some means for enforcing this on all students of medicine will soon be adopted by the State Board of Health.

The manner of conducting final examinations to prevent unqualified students from passing, is receiving needed attention in some of our colleges, and I feel safe in saying that so far as this city is concerned, where proper care has been taken in this regard, the students who have received the degree M.D. this year, will be a credit to the profession.

A plan for establishing in this State, schools of medicine where our young men and women can obtain the broadest culture instead of seeking it in Europe, is now occupying many thoughtful minds. Its consideration has shown first of all, the necessity for ample endowments of our schools, an object which the laity are just beginning to appreciate and which our support may largely aid in securing.

There is also necessity for the proper regulation of hospitals and dispensaries to the end that, while the patients receive the most skillful care, the clinical material shall be so used as to furnish the best instruction to the largest number of students and physicians, for the benefit of those whose health and lives must be entrusted to their care. These institutions should also be so managed that only those shall be treated whose misfortunes and sickness entitle them to the sympathy and aid of the public.

The Services and Duty of our State Board of Health.—It is our duty as a Society and as individuals, to support the State Board of Health in its laudable efforts for the benefit of the people, in the prevention of contagious disease, and in regulating the study and practice of medicine, and we must not fail to advise the Board in all matters that may promote more efficient service.

We are all proud of what it has done in advancing the

cause of medical education, but it is with unqualified disapprobation that we see it still granting license to practice, to students who have failed to pass the examinations in our colleges. Certainly in this our Board of Health has not done its duty to the people of the State. There is no excuse now for licensing anyone to practice medicine in this State who has not a degree from a recognized medical college. If our present Board has not the power to correct this abuse, our Committee on Legislation must aid them to remedy the evil.

Some who have given the matter much thought, are in favor of having established by this Society, a college for examination and licensing only, whose certificate would be a guarantee of superior qualifications that would be sought for by all physicians ambitious to rank well among their fellows. I hope the feasibility or desirability of this measure will be carefully considered by the committee to whom this address may be referred.

If such a college were established, it might possibly furnish the means for equalizing the preliminary and final examinations in our teaching institutions, so that their rivalry would be limited by their endeavors to furnish superior instruction. Something of this kind is certainly desirable, unless our new Board of Health can meet the want by raising its requirements for those who desire to practice in this State.

In conclusion, let me ask again that you carefully consider the following subjects:

1st. The means for increasing our membership, and the unification of the profession.

2nd. The importance of registration before our annual meetings.

3rd. The control of our charitable institutions.

4th. The sanitary interests of our State.

5th. The interests of the public in professional matters,

and education of the people through our Committee on Medical Societies, by frequent circulars of information.

6th. The appointment and work of our Committee on Legislation.

7th. A National Department of Public Health.

8th. Aid to medical libraries.

9th. Practical encouragement of the best medical schools and the proper regulation of hospitals and dispensaries.

10th. The services and duties of our State Board of Health and the desirability or practicability of establishing a College of Examiners.

PREVENTION OF CHOLERA AND TUBERCULOSIS.

BY DANIEL R. BROWER, M.D., CHICAGO.

Mr. President and Fellows of the State Medical Society: Your Committee has assigned to me the address on Etiology, State Medicine and Medical Jurisprudence, and from the vast field covered by these three important topics I have selected from the domain of State Medicine a few thoughts in reference to the prevention of two important infectious diseases.

PREVENTION OF DISEASE.—There is no part of the work of the medical practitioner more creditable than that which he exercises in the prevention of disease. Nowhere else in professional, or in any other occupation, will you find people engaged in preventing the necessity for the exercise of their special functions. Whoever heard of a lawyer engaged in so simplifying laws that there would be but little necessity for a jurisprudence? Whoever heard of a merchant so instructing his patrons that they would have the least possible necessity for the use of the various wares that he has for sale? In this matter the medical profession stands by itself as the most self-sacrificing occupation followed by man.

CHOLERA.—We find in almost every medical journal in this country and on the Continent of Europe medical men actively engaged in discussing this important topic, and trying to devise ways and means by which the spread of cholera may be prevented. To-day we know that cholera is due to a specific germ; that it is not contagious; that it is not directly communicated from person to person; that it can be developed only by the germ passing into the chylopoetic vis-

cera and there finding conditions favorable to its growth. We know that its period of incubation when thus introduced into the system is short. Four or five days is usually time enough for the development of its activities; and we know that unless the conditions are favorable for the development of the germ, unless the soil has been well prepared, its growth is not possible. Just as much is this the case as with wheat, it would be unreasonable to expect a crop from grain sown in the streets of our city. The soil must be prepared; it must be suitable to the requirements of this germ in order that development may take place, and probably during every cholera season very many germs enter the alimentary canal of healthy people and are digested just as other vegetable products are. We know that an irritable condition of the gastro-intestinal canal, or physical and moral depression, favors the development of the germ; therefore, it is our duty to devise means of prevention that our patrons shall be free, as far as possible, from such irritable conditions.

Now, the cholera germs are found only in the dejections, in the vomit and in the bowel movements, and the germs thus voided by the mouth and rectum are carried to the water, passed by the soil or otherwise into the water and consumed by the population. They attach themselves to the hands of those round about the patient; hide themselves, it may be, under the finger-nails of such attendants, and unless the most scrupulous cleanliness is practiced, the germs thus attached to the hands and crowded under the finger-nails can readily pass into the mouth of the attendant, and thus, if the conditions are favorable, the characteristic symptoms of the disease sooner or later will become manifest. It is important, therefore, as the very first thing in the prevention of the spread of cholera, that the discharges of the patient should be thoroughly disinfected, and we have at our easy and ready command to-day many disinfectants that entirely destroy the activities of the germ. We know very well that heat—and not a very high temperature at that—is sufficient to destroy

these germs, so that if the discharges are simply heated to a temperature of boiling water the germs are destroyed. We know that carbolic acid, one part in twenty; bichloride of mercury, 1–4,000, freshly prepared milk of lime, and the chloride of lime are all equally efficient in the prompt destruction of the germs. It is our duty in the furtherance of this work of prevention to make a careful inspection of the house in which the case of cholera occurs, the condition of its sewerage, the catch-basins and the traps; the condition of the cellar of the house and of the yard. All of these things should be put in perfect order, not only in the house where cholera may happen to be, but in the houses of all our patrons. Defective sewerage, unclean catch-basins, defective traps, dirty and damp cellars, uncleanly yards all furnish habitats in which the cholera germs will readily thrive. But the chief agent of choleraic infection is doubtless the water supply. The germs that thus pass from the patient readily pass into the water supply, and there they develop with marvelous rapidity; so that it is our duty to see to it that the water consumed by our patients is, if possible, filtered, or, at least, boiled, and that the process of boiling should be recent.

We should instruct our patients to drink no water except such as has been boiled within twenty-four hours. Then to guard these patients against the disease we should give them instruction in the matter of diet. The diet should be simple, nourishing, ample; it should be well cooked. Everything of doubtful propriety should be avoided, such as canned goods and preserved meats of all kinds, raw vegetables and fruits, pastry, cheese and nuts. Special attention should be paid to the milk. There is no fluid in which the cholera germs thrive better than in milk, consequently all the milk consumed should be boiled immediately before being used. The cooking utensils should be clean, and especial attention should be paid to the cleanliness of the household servants, particularly of the cook, cleanliness of her hands as well as her person generally. We should impress upon our patients

the very important fact that cholera germs that have been properly cooked are harmless, as much so as any other vegetable that may be used that is properly cooked. We should instruct them to avoid excesses of all kinds; to live lives of great regularity; to avoid over-fatigue, particularly to avoid the use of much stimulants, to be moderate in their exercise; to keep themselves occupied and their minds as free from fear and apprehension as possible. A tranquil life is one of the barriers against the invasion of the disease.

If a case of cholera should occur among one of our clients, it should be isolated. If the isolation can be made perfect in their own household, then there is where it should be had. And everything like a panic should be carefully avoided. Those who are, or must be in attendance, should be told that there is no danger of cholera attacking them unless the germs enter their systems by their mouths, and cleanliness of hands and of person and destruction of germs, as previously stated, by heat will, as a rule, make this impossible. We should give our clients instructions as to what to do with a cholera patient before a doctor arrives. Cholera patients should go to bed at once, selecting, if possible, for the purpose a bright and cheerful room. They should be kept warm, and artificial heat applied to the extremities and to the abdomen. There should be administered as speedily as possible either a moderate dose of castor oil in hot milk, or a moderate dose of hydrargyrum chloridum mitis. They should be instructed to sip water, slightly acidulated with sulphuric acid. If the doctor has not arrived up to this time and the looseness of the bowels continue, they should be instructed how to inject into the bowels at least a quart of hot water, containing about 30 grains of tannin and 30 drops of laudanum, and whatever comes from the patient by stool or by vomit should at once have its virulency destroyed either by heat or some one of the disinfectants already enumerated.

Tuberculosis.—Important as is the prevention of the infectious disease to which we have just called your attention,

because of the great destruction to life that follows its invasions, coming often as they do at such long intervals, there is another infectious disease probably as easily preventable, that is constantly in our midst, in this great city of Chicago, destroying every year over 2,000 people, that demands on the part of the profession and of the laity more earnest efforts for its prevention than it has hitherto had in this country, and that infectious disease is tuberculosis. The same great pathologist, Koch, has taught us that this infectious disease, like cholera, is the result of the activities of a specific germ, and the bacillus tuberculosis does for these patients just what the comma bacillus does for those we have just been considering; and there should be the same organized and systematic efforts for the suppression of this infectious disease as for the other, and I think it is the duty of this and of every other medical society to instruct the laity as to the infectiousness of the various forms of tuberculosis, and to give them the same plain and simple directions for the destruction of the bacillus tuberculosis as have been given so often for the destruction of the germ of cholera. There has been established for this purpose in Paris an anti-tuberculosis league; a similar league has been established in Belgium and possibly elsewhere throughout the Continent of Europe. These anti-tuberculosis leagues in these various countries are engaged in a most laudable work of instructing the laity as to the infectiousness and means of destroying the germ of this disease—a disease that has destroyed vastly more of the human race than has cholera.

The bacillus of tuberculosis is spread broadcast when the sputum of tuberculous patients is expectorated on the ground or on the floor of our street cars, hotels, or other crowded places, for no amount of drying destroys the virulency of this germ. It is also scattered about by the consumption of milk in which the germ may be present, for the germ of tuberculosis thrives in milk just as does the germ of cholera. The ingestion of tuberculous milk, or the products of such milk, such

as butter and cheese, doubtless produces the great preponderance of enteric tuberculosis that is found in children. Then there is probably some propagation of the disease by eating raw, smoked, or partially cooked meat of tuberculous animals.

Prophylaxis.—In its prophylaxis consumptives should be taught to dispose of their sputum in such a way as to render it harmless. Their sputum should never be discharged on the ground or floors or in our public conveyances. In public places tubercular individuals should be supplied liberally with spit-cups or cuspidors, and in these there should be placed disinfectants, and the contents should never be emptied into the sewers until the vitality of the bacillus of tuberculosis has been destroyed either by heat, by boiling, or by the use of one of the disinfectants. The destruction of the sputum is at the very foundation of limiting the disease, and all nurses and the laity generally should be instructed as to the necessity of this destruction. In all public places, schools, factories, hotels and in railways, means should be provided for the discharge of this sputum into proper receptacles where the process of destruction can easily be carried out. We should take care to prevent the introduction into our families, of tubercular nurses and tubercular governesses and teachers in boarding-schools and children's homes. The attention of smokers should be called to the danger that comes from tubercular cigar-makers. The germs of tuberculosis are also found in the dejections of tubercular patients, and these dejections should be rendered harmless by proper disinfection, and the linen stained with the dejections should not be dried, but boiled or burnt. Very great care should be exercised in the selection of food; milk especially should be recently boiled before it is consumed. The mother affected with tuberculosis should not suckle her child, but should confide it to a healthy nurse, if possible living in the country in a house where no consumptive lives. The meat of tuberculous animals should be prohibited, and for this purpose we should see to it that

there is a rigorous and regular inspection of meat. The custom of drinking blood in slaughter houses indulged in by a good many people is especially dangerous, for the blood of tuberculous animals is usually swarming with the bacilli. It seems to me, as I have already stated, that it is the duty of this and all other societies similarly constituted to see to it that the laity are abundantly instructed as to the infectiousness of tuberculosis in all its forms, as to the danger of the desiccated sputa of consumptive patients; as to the danger of the milk of consumptive cows, and as to the danger of consuming meat of tuberculous animals. Taught these dangers, we may have a reasonable hope that the immense mortality which prevails not only in this city, but in every portion of the civilized world, may be very materially reduced, and we can entertain the possibility that this condition, which is the cause of about one-eight of the deaths throughout the world, may be entirely removed.

DIPHTHERIA IN CHAMPAIGN COUNTY.

BY C. B. JOHNSON, M.D., CHAMPAIGN, ILL.

About one hundred miles south of Chicago, on either side of the fortieth parallel, in the very heart of the "great corn belt," lies the County of Champaign. In area it is thirty-six miles from north to south; twenty-eight from east to west, and contains, in round numbers, one thousand square miles.

About five-sixths of the county is prairie, and the remaining sixth was originally timber land.

Geologically* it is an unusually level drift-plain, sloping gently to the south, its northern border being approximately seven hundred and fifty feet, and its southern six hundred and fifty, below sea level.

Three glacial moraines traverse the county from northeast to southwest, as follows: California Ridge its northeastern limits; Yankee Ridge its central, and Staley Ridge its southwestern.

Above adjacent farm lands these moraines have respectively an elevation of seventy, sixty, and thirty feet.

They serve as so many watersheds, and give direction to the following streams: West of Staley Moraine, flowing southwest, the headwaters of the "Okaw," or Kaskaskia; between Yankee and Staley Moraines, and running south, the headwaters of the "Ambraw," or Embarrass River; midway between California and Yankee Moraines, and coursing southeast, the headwaters of Vermillion River.

In the northwest part of the county the Sangamon River breaks through Yankee Ridge and sweeps southwest.

*For some interesting facts relating to the surface geology of Champaign County I am indebted to Prof. C. W. ROLFE, of the University of Illinois.

Upon these streams and their sluggish tributaries this locality was wholly dependent for drainage previous to about the year 1873.

The entire surface of the county is covered by a heavy bed of drift, which has a thickness approaching one hundred feet in the eastern half of the county and two hundred and fifty in the western half. This drift is the ground moraine of the glacier, and contains, at definite horizons, strips of sand and gravel that lead away from the moraines above mentioned. It is from these strips that the water supply is obtained, and they in turn derive most of their water from the moraines. The inhabitants of the county get an ample supply of water by sinking wells that in a general way are divided into two classes, viz.: shallow and deep. The first range in depth from six to thirty feet, and from the circumstance that they gather their supply of water from near the top of the ground, are called "surface" wells. The second variety are in all cases bored, and from the fact that they are sunk from fifty to two hundred and fifty feet below the surface, are called "deep" wells. In diameter they are from two to six inches, and are encased with iron tubing. Pollution of these wells from surface filth is believed to be next to impossible. Sanitarians will be glad to hear that from these deep wells many farm houses in the county, and not a few families in the towns and villages, obtain their water supply.

The soil of Champaign County is for the most part a black, heavy loam, from one to five feet in depth, and before the era of artificial drainage, the whole face of the country was thickly studded with shallow depressions that heavy rains unfailingly converted into ponds of water. These depressions were often in such close contiguity that during rainy seasons, when the "floods came and the windows of heaven were opened," the many small ponds would coalesce and become one vast sheet of water that would in many cases submerge the country for miles.

When the rains ceased, the very slight inclination of the

surface would in due time cause the waters to recede and settle in the ponds. These ponds were, in nearly all cases, devoid of outlet, hence evaporation, that came with hot weather, was the only means of emptying them. As a result of this process, the water would slowly disappear, when the surface of the pond would first become an impassable bog, and next almost as hard and seemingly as impermeable as stone.

About twenty years ago tile drainage was introduced, and proved so beneficial that it soon came into general use. As a result, ponds and bogs have become things of the past, and their sites, together with adjacent lowlands, are now the most productive and highest priced farm lands in the county. Coincident with the introduction of tile drainage came a change in the character of some of the more prevalent diseases. The most marked change noticeable is the relative scarcity of malarial diseases and dysentery, and increased prevalence of typhoid fever and diphtheria, as compared with twenty years ago. Increase in the last two diseases mentioned is of course not a result of better drainage, but in spite of it.

Champaign County contains about forty-five thousand inhabitants, distributed as follows: Seven thousand five hundred in Champaign City; four thousand five hundred in the city of Urbana; but as the corporation limits of these two towns are contiguous, they may, from a sanitary standpoint, be looked upon as one municipality of twelve thousand inhabitants. There are about seven thousand persons in some twenty villages, sprinkled pretty evenly over the county, containing each from one hundred to twelve hundred population. The remaining twenty-six thousand find their homes in the farm houses throughout the county.

Before speaking of diphtheria as it has prevailed in Champaign County, a brief consideration of the disease in general will not be out of place.

For the sake of as much definiteness as possible, let it be premised that diphtheria is an acute, infectious, contagious

disease, arising from a specific cause; that it occurs in sporadic, endemic and epidemic form; that its one characteristic manifestation is a membranous exudate, usually upon and within the mucous membrane of the upper air passages, and parts adjacent thereto; and finally, that it is in most cases attended with severe general symptoms, and often followed by certain peculiar forms of paralysis.

Two types of the disease, viz.: mild and severe, have long been recognized. The mild form begins with more or less fever, soreness of throat, and general lassitude. The tongue is coated white, tonsils swollen, and the fauces are red and inflamed. Twenty to forty hours later, thin white patches appear, either on the tonsils, soft palate, or posterior pharynx; further along all these parts may become involved. At the same time the cervical glands are somewhat swollen. Usually the disease ends in recovery in from five to fifteen days.

The severe form is ushered in by high fever, great nervous disturbance, and sometimes convulsions. The tongue is covered with a heavy brown fur, the tonsils are greatly swollen, and the fauces are of a deep red color and have an erysipelatous appearance. Instead of the thin white patch found in the milder cases, the membrane in the severer form is thick, of a dull ashy color, generally invades the whole throat, and in many instances causes death by passing down the trachea.

The glands about the neck are enormously swollen, and the acts of swallowing and breathing are accomplished with much difficulty. Meantime the general system becomes intensely poisoned and the patient profoundly prostrated. As time progresses these terrible symptoms go from bad to worse till death ends the sufferings of the victim.

Regarding the etiology of diphtheria it has been quite satisfactorily proven that the microbe known to bacteriologists as the Klebs-Loeffler bacillus is the active agent in producing the disease. The bacillus itself does not seem to be directly toxic, but after finding lodgement upon a mucous membrane

it sets up a process by which a deadly ptomaine is produced that is taken up by the absorbents, carried to all parts of the body, and thus the whole system is permeated by the diphtheria poison.

A series of cautiously conducted laboratory experiments, together with careful clinical observation, would seem to have almost, if not quite, demonstrated the fact that two diseases are embraced under what we call diphtheria. One of these is true diphtheria, and is believed to be always the product of the Klebs-Loeffler bacillus; the other has been designated pseudo-diphtheria, and is believed to be the product of a microbe, but just what one does not seem to be definitely settled.

In contradistinction to true diphtheria, pseudo-diphtheria is not followed by paralysis, does not extend to the larynx, and from it the great majority of patients recover.

Regarding the first appearance of diphtheria in this part of the State, I quote the following from Dr. M. S. Brown, now of Danville, Ill., but for many years a practitioner at Urbana, Champaign County. He says: "The first case of diphtheria in the county was a Mrs. Brent Benner, of Urbana, who died during the fall or winter of 1861, and was the patient of Dr. Winston Somers. The first case I ever saw was in the spring of 1861, near Camargo, just without the southern limits of the county. I thought it croup, as did Dr. Pierce, who was called in consultation. The case was very malignant in form, but thinking it croup, I gave calomel for several days, and now believe it saved my patient. Dr. Townsend was also called. He diagnosed the case diphtheria, and recommended supporting treatment with the free exhibition of iron, quinine and chlorate of potash.

"On my return from the army in 1864 I treated several sporadic cases, south and east of Urbana, with perfect success. Iron, quinine and chlorate of potash were used in all asthenic forms of disease; but as all, or nearly all, cases assumed that type, I may say that this treatment was used in

all instances. It was then believed to be a systemic disease, with throat symptoms as a local manifestation."

The worst ravages of diphtheria in the county previous to the Tolono epidemic in 1874, occurred at Urbana in the family of Thos. R. Leal, late County Superintendent of Schools.

In twenty-one days after its first appearance the disease swept away his entire family of children, consisting of a babe of nine months, a little girl five years old, and a little boy seven. These cases were seen by Drs. Brown, Goodwin, Somers, Mill and Leal. Of the third and last case to die Dr. Brown says: "While the family were following the second child to its grave, Drs. Leal, Somers, Mills and myself met by appointment at Mr. Leal's house. Upon our arrival little Annie, the five year old girl, was romping round and making the house ring with her merry peals of laughter. I suggested that we carefully examine her throat. This was done, but nothing was revealed that indicated the least tendency to disease of any kind; indeed, so far as external manifestations were concerned, she seemed in perfect health. However, to apply one more test, her skin was punctured with a needle, a drop of blood obtained on a glass slide, and carried to the office of Dr. Somers, where it was put under a microscope. When a focus was obtained I was called to examine it. As soon as I saw the shriveled, crenated condition of the blood corpuscles, I called to Dr. Leal, the uncle of little Annie, and never shall I forget the awful groan he gave when he made the examination. Said he, 'She will die, as sure as God reigns. The blood is dead now.' This seemed to be one instance where the disease was systemic before there were any local manifestations, as on the following morning the child had sore throat, and by evening diphtheritic patches upon her fauces.

"This was the 26th of September, 1868. Three days later the little girl was dead. Drs. Mills, Leal and myself were in constant attendance. We left no stone unturned, and all that

was then known was most persistently administered and applied."

The next outbreak of diphtheria occurred at Tolono, in the more southern limits of the county, late in the summer of 1874. At the date referred to I had been in practice but a few years, was located in Tolono, and at a farm house, some three miles south of that town, saw a case of diphtheria for the first time. My visit to the patient was an incidental one, as I was riding out with a doctor friend, older than myself, to see a patient neither of us had before visited. Upon arriving at the house my friend courteously invited me to step in and see the case with him.

We found a little girl, about ten years old, who complained of sore throat. Upon looking in the child's mouth the doctor turned to me and pronounced the one word, "diphtheria!" A moment later I was asked to examine the case. I looked in the patient's throat, but my uninitiated eyes detected nothing save a little redness of the fauces, together with what seemed some innocent particles of mucus on the posterior walls of the pharynx. Nevertheless, before the lapse of ten days, the little girl was in her grave, and hers proved to be the first case in a severe epidemic of diphtheria. And for a period of from four to six weeks, following the death of this patient, all the physicians at the time in active practice in Tolono had all the work they could attend to, the greater part of which was looking after cases of diphtheria.

As in all epidemics, we encountered every shade and variety of the disease. To mention a few of these: There was the deadly malignant type, that breaks down the blood corpuscles, saps the vitality, and quickly takes the life of the patient; the laryngeal form, that almost as invariably produces death by strangulation, as does the hangman's rope; the septic variety, that slowly but surely poisons the whole system, so that recovery is in the great majority of cases impossible. There were cases that, after lingering for a time, appeared to improve, till a return to health seemed one of the

sure things of the future, but the hopes of friends and physician would alike be dashed to the ground by the patient suddenly gasping for breath and dropping dead from paralysis of the heart, or some other equally vital organ.

Quite a number of cases were so light that the consciencious practitioner would hesitate to call them by so grave a name as diphtheria, but a careful consideration of all the facts surrounding them seemed to justify this appellation. In some instances large families of children would have the disease, in seemingly severe form, and yet all recover. In other instances more than half the children in a numerous family would be swept away.

About half a block from my residence was the home of five beautiful children that had the misfortune to be scourged by the disease. They ranged in age from three to thirteen years, and, in going to and from their home, passed frequently within a few feet of my door. Their pretty blue eyes, fair, clear complexion, well rounded limbs, fine healthy forms, and happy, interesting faces, had, during the spring and early summer of 1874, excited my admiration.

About the time we realized that diphtheria was epidemic in Tolono, I was called to see the youngest of these children, a little boy three years of age. He had been sick a day or two, and when I saw him had the characteristic deposit of diphtheria. I told the parents what the trouble was, explained something of its nature, and recommended that the sick child be separated from the others, but the father, an Irishman, answered me by saying, "No, doctor, we'll jist let them all doi togither." In a little time all five of the children were down with the disease, and later three died. One, a beautiful little girl ten years of age, had what seemed a light attack, but suffered a relapse, when the disease became tracheal, with the usual symptoms of stridulous breathing, brassy cough, voice reduced to a whisper, livid lips, dusky face, and the other manifestations that point so unmistakably to a narrow-

ing of that most important gateway of life, the glottis. Of course the patient did not long survive these symptoms.

In about six weeks the epidemic seemed to have spent its force, and ten weeks after its appearance every trace of diphtheria, save some paralytic symptoms, had disappeared from the community. In all, there were thirty deaths, and of these eight had been my patients. From first to last, about one hundred and fifty persons had the disease, in severe or mild form.

The year 1874 was one of the driest I have ever known. The wells all gave out, and as the deep, bored well was not then in use, water was obtained by sinking holes in the dry beds of ponds, at that time so common on our prairies. This water had a strong odor, something like that of decaying vegetable matter; nevertheless, we were all compelled to use it, and were glad to buy it and have it put in our cisterns and wells.

Our treatment was mainly tonic and stimulant. In all cases we gave iron in some form, as well as quinine and brandy. Milk, egg-nog and beef tea were the forms of nourishment most relied on. We made large use of a solution of chlorate of potash in tincture of iron, simple syrup and glycerine—the tincture of iron being a liberal ingredient in the prescription. Other than my own, I saw a great many cases that were under the care of my brother practitioners. Among the latter was the late Dr. Alexander T. Darrah, a former president of this Society.

Regarding diphtheria in different parts of the county, I shall take the liberty of briefly quoting several of our leading physicians. Dr. McKinney, in the northeast part of the county, says: "The first epidemic I witnessed was during the year 1869-70. In the beginning the cases seemed relatively mild, but later assumed a malignant form. Of these quite a number were tracheal, and of the latter but one recovered. The second appearance of the disease was in 1875-6, following which were cases in greater or less number till 1883.

Since the last mentioned date our locality has not been visited by diphtheria till last winter, when the prompt action of our local health authorities prevented its spread. It appeared in but three families, and there was only one death."

Dr. Newcomb, of Fisher, in the northwest part of the county, says: "We have had two outbreaks of diphtheria besides several sporadic cases. In the first instance, the disease made its appearance in a district school. Out of fifteen scholars in attendance, eleven had the disease, five of whom died—death occurring, in all cases, inside of eight days. Two cases were laryngeal, with profound systemic poisoning. Temperature was not notably high, averaging about 103 deg.; circulation was extremely weak.

"The ages of those affected were from three to fourteen years, and all deaths were in those under ten. Only two cases occurred outside the school, and in both instances contagion could be traced to the scholars affected. In the second outbreak there were ten cases. One of these was tracheal, and died in five days. One other died at the end of six weeks from paralysis. In support of the contagion theory I will give you a very pointed instance: Two children in a farmer's family developed diphtheria; a friend, living two and one-half miles away, came to assist in caring for the sick; he sat up all night, administered medicine and made local applications to the throat. In the morning he returned home before his family were up. He removed his clothing, sunk it in the river with a stone, and took a bath, but failed to wash his whiskers and hair. Inside of ten days five children in his family developed diphtheria. No other family in the neighborhood, and no family between those two, or anywhere near, had any symptoms of diphtheria for over a year."

From Dr. J. C. Harmon, of Rantoul, in the north part of the county, I learn that that section was visited by diphtheria in 1883, and that there were in all about one hundred cases, with ten deaths. In 1890 there was another visitation, but

there were not so many cases nor so many deaths as in the first outbreak.

Dr. J. G. Chambers, of Sadorus, in the southwestern part of the county, and who has been in his present locality twenty-five years, has encountered no epidemic, but speaks of four houses wherein diphtheria has several times broken out, with a total of four deaths.

Dr. J. D. Mandeville, of Philo, in the southeastern part of the county, says: "I have had but five fatal cases of diphtheria, and these were under five years of age, and died within twelve hours after I was called. Four of them were tracheal and the other pharyngeal. The latter came on in a child aged two that was convalescing from scarlatina at the time that disease was epidemic here seven or eight years ago. As you know, I have been in practice here twenty-five years, and during that time there has been but one epidemic of diphtheria. This was in the fall of 1874, at the same time of the Tolono epidemic, of which it was, in fact, a part. At the time of its occurrence I was away from home."

Dr. J. D. Gardner, of Mahomet, in the west part of the county, writes: "In the last year I have met with but twelve genuine cases of diphtheria, all in three families, with three deaths. Of course many other cases had a suspicious appearance, but I would not care to report them as due to diphtheria poisoning. In my three families, the disease was plainly traceable to Bloomington, Ill., and later to each family in succession — the last family contracting disease from clothing which should have been destroyed."

Dr. George T. Rowland, of Homer, in the southeast part of the county, says there has been no epidemic in his locality, but in the last few years he has seen and treated a number of cases of "putrid sore throat," or diphtheria, as you prefer to call it. A number of these patients had partial paralysis of some of the throat muscles, hence there can be no question concerning the character of the disease from which they suffered.

He had in one family six cases, and is a strong advocate of calomel in the treatment of this class of patients.

He gives a free purge of that medicine when first called to a case, and continues its administration in smaller doses. He reports but one death.

In February, 1890, while I was serving as health-officer of Champaign, a homeopathic practitioner came to my office and reported that he had some cases of diphtheria at a certain house within our corporate limits. I accompanied the doctor to the place designated, and found two rooms literally filled with diphtheritic patients.

There were ten children in the family, ranging from a babe in arms to a young man eighteen years of age. Most of these had the disease, and were either in bed or sitting about the rooms. The house was not more than four inches above the ground ; the ceilings were low, and there was no ventilation save what came from opening the doors in passing to and fro. The air in the house was stifling and heavily laden with a sickening odor. As no need seemed so pressing as more room and better ventilation, it was suggested that a vacant building next door be utilized and converted into a temporary hospital. But the family were obstinate and clung to their crowded and unsanitary quarters. We, however, made use of disinfectants, and ventilated the rooms as best we could, but the treatment was, of course, left to the attending physician, who, it will be remembered, was a homeopath.

In the end five of the ten children died, but with the heavy odds to contend with, it is doubtful if any one could have done better than the attendant in charge.

Every precaution practicable was made use of to prevent the spread of the disease. During the time the children were sick the premises were guarded, and none save physicians and nurses were allowed access to the house.

But, notwithstanding our best directed efforts, the disease was not confined to this household, and for the following three years showed itself in many parts of the city. Every

house where diphtheria appeared was quarantined. In most cases we succeeded in having the sick separated from the well, putting the patient, where practicable, in an up-stairs room, and hanging over the door that communicated with other apartments a sheet saturated with the following solution: Corrosive sublimate, 40 grains; sulphate of copper, 4 drachms; water, 1 gallon.

I am satisfied that our persistence in isolating the children sick with diphtheria, from those not affected in the family, was a means of saving many lives. Meantime every effort, with the means at hand, was made to put the city in good sanitary condition. But in this attempt we were greatly hampered by the fact that, as yet, we have no efficient sewerage system, our town being in an unfortunate transition state between a big village and a small municipality. This being true, it goes without saying, that more than one well in the older settled parts is not ideally free from contamination with the privy vault. We hope for better things in the near future.

In this connection allow me to relate a well authenticated incident, that will inculcate its own lesson: A citizen of a little city, in central Illinois, called on his groceryman and inquired the price of two empty fish kits. "There are two at my back door you can have if you will empty their contents," replied the groceryman.

The contents proved to be a liberal amount of salt, contaminated with two dead fish. The man took the fish kits home, and thinking of no better place, buried their contents in a hole dug in his garden. He thought no more of the circumstance till several weeks later, when his well, some fifty feet from where the salt was buried, became so brackish that water from it could not be used.

In discharging my duties, cases came under my observation that were treated by regulars, homeopaths, eclectics, and domestic remedies. But no matter what the treatment, or who the attendant, I saw little variation from the rule, that

the serious cases very generally died, and the mild ones, in most instances, got well.

In May, 1891, my time as health-officer of Champaign expired, and, at the date mentioned, I was succeeded by Dr. J. T. Pearman, to whom I am indebted for many facts relating to the epidemic. From Dr. Pearman I learn that no case of diphtheria has appeared in the city for nearly three months.

In seeking the source from which came the outbreak, we learned that one of the larger boys in the family of ten children, wherein occurred the first cases, had recently returned from a distant town, on account of the appearance of diphtheria in the school he was attending.

Concerning treatment, I wish first to quote briefly from several of our local physicians, who treated many cases during the late epidemic:

Dr. H. C. Howard is a strong believer in local applications, and among his favorite prescriptions are the two following: ℞ Sub-sulphate of iron [Monsell's salt], 20 grs.; chlorate of potash, 20 grs.; water, 1 oz. Misc. S. Apply freely with a swab. The second prescription is: Corrosive sublimate, 5 grs.; alcohol, 1 oz. Misc. S. Apply freely to throat and parts affected. Dr. Howard thinks the bichloride much more efficient with alcohol as a vehicle than it is when used in water. Internally he gives tincture of iron freely, to sick and well alike, when the disease appears in a family, as he thinks this medicine has strong prophylactic virtues in diphtheria.

Dr. J. T. Pearman says: "Regarding diphtheria as primarily local, I rely largely on local medication; but right here I wish to enter my protest against all manner of probangs, swabs, bougies, etc., no matter with what powders or lotions they may be armed. I believe all kinds of swabbing to be wrong in theory, delusive in practice, and fraught with much danger, as, in your attempt to medicate the false membrane, you wound the underlying tissues, and thus produce a condi-

tion of traumatism which is a fruitful field for the reappearance of the disease in renewed and redoubled intensity.

"In my judgment, a much easier and more efficient plan, especially in the case of children, is spraying the throat with an atomizer. For this purpose, my favorite drug is carbolic acid, of which I use a two and one-half per cent. solution.

"For internal use, the following, with me, is a stereotyped prescription: ℞, Chlorate of potash, 1 drachm; tincture of iron, 1 drachm; dilute muriatic acid, 1 drachm; simple syrup, 14 drachms; water, 16 drachms. Misc. S. Teaspoonful every two hours undiluted. I also add one-half ounce of this to a glass of water, and use as a gargle, as I believe the prescription has great virtue locally."

Dr. Cushing says: "My treatment of diphtheria consists largely in the internal use of dilute muriatic acid, to which I add, when the throat has the dark purple appearance sometimes seen, small doses of capsicum. I also use stimulants freely. Locally I apply, by means of a swab, the peroxide of hydrogen, or a bichloride of mercury solution of one to 500 or 1,000, according to the age of the patient."

So much for what some of my colleagues have to say concerning the treatment of diphtheria.

As for myself, I have nothing new to offer, but will take this opportunity to recommend the following plan of medication:

If called early give a calomel purge, and follow this with two grains every two hours, or as much of the medicine as can be borne without too free catharsis.* Local treatment is accomplished by keeping near the mouth of the patient cloths saturated in the following solution: Carbolic acid, 1 oz.; oil of eucalyptus, 1 oz.; spirit of turpentine, 8 ozs. Misc. At the same time pour two tablespoonfuls of the solution in a shallow basin, add a quart of water, and keep at a boiling temperature in the sick room.†

* See paper by Dr. W. H. DALY, in N. Y. Med. Record for June 12, 1886.

† See article "Diphtheria," by Drs. J. LEWIS SMITH and F. M. WARNER, in Annual of the Universal Med. Sciences issue of 1892.

This treatment is believed to have a favorable influence on the general course of the disease; furthermore, its facility of administration and application are greatly in its favor. Finally, the prophylactic virtues possessed by the vapor adds to its value, as danger from contagion being carried from the sick room by attendants is reduced to a minimum.

The calomel, in this plan of treatment, is of course incompatible with the simultaneous exhibition of acids; but tonics, stimulants, and other means, may be employed as indicated.

During the three years diphtheria prevailed in Champaign there were fifty-four deaths from that disease. Private burials, together with proper efforts in the way of fumigation and disinfection, were enforced in all cases. Very few adults were stricken with diphtheria, and in no instance did death occur to any one beyond twenty years of age, and the great majority of those who died were under fifteen. From first to last, there were, in round numbers, about four hundred and fifty persons affected with the disease. These four hundred and fifty cases, in a general way, may be put into three groups, viz.: severe, mild, and *suspicious*. Under the head "suspicious" I will take the liberty of reporting the following cases, all occurring during the prevalence of diphtheria in Champaign.

One evening my little girl, seven years old, complained of sore throat and fever. An examination revealed redness and congestion of the fauces. Next morning the patient was still feverish, and upon looking in the mouth, white patches were detected on the posterior pharynx. The patient was kept in an upstairs room, and isolated from the other children in the family. She was put upon chlorate of potash in water, acidulated with hydrochloric acid, and means to allay fever were made use of as indicated. The second or third day the patient called to me and said: "See what came out of my mouth." At the same time she handed me a substance of ivory whiteness, not far from an inch in length, and nearly

as large round as a lead pencil. A closer examination proved the specimen to be a firm membrane, rolled upon itself, with blood-stained margins. In a day or two the patient was sitting up, but it was deemed prudent to keep her isolated for a week or two.

Upon going home one evening the little girl's mother said that, before she was aware of it, the patient had slipped away from her, and gone down in the sitting-room, where she played with her little brother, five years old. A week later the little girl was practically well, but about this time her brother, with whom she played, developed fever, sore throat, and, a little later, white patches. Still later he took from his mouth a membrane of precisely the same character as that which came from his sister's throat. Query: Were these cases of mild diphtheria, pseudo-diphtheria, or were they membranous pharyngitis? With the latter disease, as described by Sajous, the symptoms certainly corresponded very closely. Let us now turn our attention to another form of suspicious cases:

I was called to see a young man twenty-two years old. He was sitting up, but complaining of thirst, headache, and pain in back and limbs. Upon examination I found him feverish, his tongue coated white, and upon either tonsil were thin, flaky patches, yellowish white in color. His fever and pain were allayed with antipyretics and quinine, and the following mixture was directed to be taken steadily: ℞. Tincture of iron, 4 drachms; chlorate of potash, 1 drachm; simple syrup, 2½ ounces. Misc. S. Teaspoonful every three hours.

In a few days the patient regained his wonted health, but meantime a sister, eleven years of age, contracted the same trouble, and in the few weeks following, four more of the family, ranging in age from fourteen to twenty years, were affected in a similar way.

The disease these young people had corresponds very closely with what the books describe as follicular tonsilitis, but so high an authority as A. Jacobi says: "What has been

called follicular tonsilitis is diphtheria in many, perhaps most, instances."

Did not want of space forbid, I should like more fully to discuss what I have hinted at by implication, the differential diagnosis of diphtheria, as I am convinced that the more one sees of this disease the more he becomes satisfied that the line of demarcation between it and some kindred diseases is dim and shadowy in the extreme. But notwithstanding these facts, the world at large, and many medical men as well, are not disposed to make any allowances for the difficulties one has to encounter in defining these cases.

DISCUSSION.

Dr. J. H. Tyler, Clinton:

I live in the same latitude that Dr. Johnson does, and I wish to speak in regard to the treatment. His system, in the main, I consider very good. Diphtheria has prevailed in our region of country, and about three years ago we had about twenty cases. In addition to the treatment suggested by Dr. Johnson, we used a great deal of quinine. We thought perhaps there was some malaria connected with it, and in those cases we used quinine and seemed to be more successful, although many of them died from diphtheritic poison. We used the chloride of potash and fluid tincture of iron, and other preparations; and we used in connection with the quinine digitalis, to some extent, as a heart stimulant. In 1862 diphtheria prevailed all over the country, and I recall very distinctly that my treatment at that time was about the same as now, except in place of giving whisky I gave milk.

Dr. Robert H. Babcock:

There were two points which greatly interested me. One a reference to sudden death from probable paralysis, and the other was the presence of the epidemic of diphtheria during an exceedingly dry season in the summer of 1874. Undoubtedly many cases of sudden death in diphtheria are the result of paralysis of the heart, from paralysis of the vagus, and others from sudden arrest of the heart, which is commonly called paralysis of the heart. It seems to me that sufficient attention is not paid clinically or post mortem to the changes which the heart undergoes in diphtheria. We know from the researches of Revot and Falk, who diagnosti-

cated twenty-two cases of inflammation of the heart out of five hundred cases of diphtheria, that the heart undergoes very interesting changes as the result of the diphtheria poison. They divided the cases into two categories, one in which there is parenchymatous degeneration of the heart, and the other in which there is an interstitial inflammation of the heart. The parenchymatous degeneration of the heart, these observers were led to conclude, was a true molecular degeneration of the fibres of the heart, due to trophic changes rather than to inflammatory changes. They found, furthermore, that parenchymatous degeneration of the heart was frequent in the very severe forms in which the constitutional disturbance was so marked as to mask the symptoms referable to the heart. The other form of heart disease they considered a true inflammation of the heart, since they found areas of interstitial inflammation, characterized by proliferation of the cellular elements, and by the development of new connective tissue. In examining the blood vessels of the heart they found evidence of periarthritis but not endoarteritis ; and, furthermore, the nerves of the heart were healthy, as was also the central nervous system, and they were led to conclude, therefore, that this acute interstitial myocarditis was a true inflammation set up by the diphtheritic poison. This form of heart disease interests us particularly, since it comes on not infrequently in the convalescence of the disease, and in the course of mild cases the symptoms are sometimes quite marked ; according to those authors, in addition to the peculiar cadaveric pallor of the countenance, and the very great prostration, there are frequently symptoms directly referable to the heart itself; the patient may complain of pericardial distress, at other times the mischief going on in the heart is only detected upon a careful physical examination. The acute dilatation which supervenes leads of course to an increase in the area of pericardial dullness and the heart sounds are feeble, and frequently a systolic murmur at the apex. The pulse is quite characteristic, being extremely rapid, and frequently a true delirium occurs, being not only intermittent but rapid and irregular. This is frequently ushered in by gastric disturbances—as vomiting—and often by diarrhœa and colicky pains, in which case, of course, the symptoms might obscure those referable to the heart and the practitioner be thrown off his guard. The urine is said to be albuminous and not infrequently bloody. The diagnosis in this case is not ordinarily difficult. In the parenchymatous degeneration the diagnosis is sometimes fraught with great difficulty. It must be differentiated from paralysis of the lungs as well as from paralysis of the heart, and in this latter case the stress is laid upon the fact that the patient becomes extremely cyanotic and suffers greatly with dys-

pnœa for a greater or less length of time prior to the fatal termination. The prognosis, whatever the lesion of the heart, is extremely grave, and the treatment is unsatisfactory, consisting, of course, of rest, appropriate stimulants and dietetic management, and heart tonics.

I am naturally interested in this case from the standpoint of the changes in the heart, and it seems to me that if those authors had been able to diagnosticate the condition as many as twenty-two times out of five hundred, the condition must be more frequent than is generally supposed.

I wish to allude to the probable influence of the height of the surface water with reference to the spread of an epidemic, even of diphtheria.

Dr. J. A. Baughman, Neoga:

Having lately suffered from diphtheria myself, and having suffered a typical paralysis following it, I may be able to say a few things of interest in regard to diphtheritic paralysis. About three weeks after I recovered from the acute stage the first paralysis, or muscular inability, that I suffered was in the palate. The palate was so paralyzed that in taking fluid it would squirt out of my nose, it being always necessary to hold the nostrils shut in ingesting liquids. Solids I was very careful about attempting to swallow, as strangulation was very imminent. Occasionally I could swallow a solid, following it immediately with a fluid and holding shut the nostrils. The peculiarity of the paralysis, of changing from one part of the body to another, was very manifest in my case; it left the palate and affected the right hand. The arm was strong; if I once grasped anything I could hold it, but in grasping the fingers closed very slowly. I could not suddenly take hold of anything, but when I once had it the grip was firm. The paralysis in that hand lasted perhaps a week, then the left hand and arm was attacked with manifestations similar to those I suffered in the right hand; then the feet—first the right one was attacked. Whenever it made a new invasion it seemed to leave the old site. The manifestations in the feet were very much the same as in the hand. The foot was always cold; I could crowd it into as tight a boot as muscular efforts would admit of—I could not hurt it; I could chafe it in a hard or tight boot and not know it until I removed the boot. It then attacked the left leg. Before it left the right one I could walk, and perform all the ordinary functions of locomotion, with slowness; it was utterly impossible to run, yet I could walk a brisk gate. Then it left my leg and attacked something in the thorax; I never satisfied myself what it was. I suffered very greatly from dyspnœa; the efforts of breathing were labored from

the first, the pulse seemed to me normal, except when attempting active exercise. I could detect no change in the urine. The treatment I gave it was absolutely nothing. I did not take one dose of medicine, and I thoroughly recovered in about six months.

DR. N. S. DAVIS, SR.:

While I did not hear the papers, I have been interested in the remarks of Dr. Babcock in regard to the condition of the heart in diphtheria. It is doubtless true that fatal failure of the heart takes place in this disease from the three pathological conditions just described by Dr. Babcock, namely: true paralysis of the cardiac nerves, a parenchymatous inflammation, and a molecular degeneration of an atheromatous character. The first and third of these conditions often co-exist, and are probably of much more frequent occurrence than the cases of true carditis. That the specific cause or causes of diphtheria exert some positively degenerative influence on the corpuscular elements of the blood, by which the cardiac and other muscular structures become impaired in both molecular arrangement and contractile force, is evident, both from the symptoms that accompany and follow attacks of the disease. The nature of the poison itself gives evidence of having a powerful influence on the quality of the blood, tending to deteriorate the hæmaglobin and to interfere with the full conversion of the hæmaglobin into oxy-hæmaglobin. My observation leads me to think that this very fact in regard to the failure of the heart, in the last stage of the disease, and which causes a large portion of the fatal cases, should make us consider very carefully the tendency of the remedies that are given freely during the acute stage of the disease. Among the most popular remedies are the liberal use, almost from the beginning of the attacks, of what are called heart stimulants, to guard against the occurrence of such failure. Of these so-called stimulants, or heart tonics, alcohol, in the form of whisky or brandy, is the chief, often aided, when the temperature of the patient is high, by antipyrine or phenacetin, and often given liberally from the beginning to the end of the case. But what are the effects of these remedies? They quiet your patient, as any anesthetic would, causing more rest, and hence you go on thinking they are doing well until, just after the crisis, an unexpected failure occurs. If there is any truth in the inferences from experimental therapeutics of the last twenty years, it is that alcohol and all the coal tar series of remedies, from beginning to end, affect directly the hæmaglobin and diminish its conversion into oxy-hæmaglobin, thereby diminishing the oxygen taken up for internal distribution to sustain the molecular or metabolic changes, both of nutrition and waste. Hence every dose you give of these

agents impairs nerve sensibility and encourages parenchymatous degenerations, thereby hastening the very heart failures you hoped to prevent. There is no remedy more certain to diminish the amount of oxygen taken up, or the conversion of hæmaglobin into oxy-hæmaglobin, than alcohol, as has been clearly demonstrated by experimental proof. All the medical world knows that it favors molecular degeneration, and produces even peripheral degeneration of the nerves throughout the entire system by its persistent use; and a careful comparison of clinical results shows that the mortality of diphtheria is increased in proportion to the quantity used in its treatment.

Dr. Ephraim Ingals, Chicago:

In relation to the treatment of diphtheria, the best local application that I know is the chlorate of potassium, used by holding the compressed tablets in the mouth. Their slow solution in the saliva keeps the medicine continuously on the suffering throat. It may also have some beneficial influence on the blood. Its use in this way generally causes no inconvenience to the patient. For an adult, from four to six five-grain tablets may be used daily. The throat should be frequently gargled with warm water, to remove all offending matter that can be easily washed away. During convalescence, if the nerves that give power to the heart seem to be impaired, recumbency is important until the powers of the heart are restored. Especially, during this period, heart tonics, such as nux vomica, strophanthus, digitalis and convallaria are essential. With these, two grains of quinine should be given to an adult three times daily, and a dose proportionately small for those younger.

Dr. H. McKennon, Paris:

Although there has been such a large number of preparations brought forward for diphtheria, it seems to me that none of them are desirable, or at least they are not satisfactory. It seems to me from the etiology and pathology of diphtheria that there are just three indications, and any remedy that will meet those indications will be right. They are disinfection, elimination and support; and from the fact that post-diphtheritic paralysis must be attributed to retention of ptomaines, elimination is one of the most valuable factors, together with the disinfectants the gentlemen have named. I also endorse what Dr. Davis has said in regard to the coal tar remedies.

Dr. G. W. Nesbitt, Sycamore:

Not enough stress has been laid upon the use of bichloride of mercury as a topical application in diphtheria. I have of late

years used it in a number of cases, and my success has been better since commencing its free use, using much the same supporting treatment as others do. I have been waiting three years to hear some one make the remark in public that Dr. Davis has done to-day in regard to the coal tar series of remedies. Since victims of the grippe were slaughtered by heart failure and fatal pneumonia and bronchitis, three or four years ago, it is hoped the danger from these remedies will be better understood and appreciated. I use a combination of bichloride of mercury, muriatic acid, and muriate tincture of iron, and give it once every half hour to two hours, and in the majority of cases the throat will be perfectly clear of diphtheritic membrane in five days; it may reappear as a thin coating of membrane but disappears again in from three to five days. Certainly a much greater percentage of the cases has been saved since beginning to use the bichloride of mercury.

BRONCHITIS, AND ITS RELATION TO BRONCHO-PNEUMONIA AND OTHER DISEASES OF THE RESPIRATORY ORGANS.

BY J. M. G. CARTER, M.D., CHICAGO.

To fully understand a bronchitis, or an inflammation of the bronchi, it is necessary to bear in mind the character and kind of tissue involved. The bronchi are lined by mucous membrane, and the pathological conditions to which this membrane is subject, in the bronchi, are similar to those occurring in other mucous surfaces.

The three forms of inflammation so frequently met with in the throat — catarrhal, croupous, and diphtheritic — likewise occur in the bronchi; and a very common, indeed the most common, form is the catarrhal, technically known as catarrhal bronchitis.

Such an inflammation in the bronchi and bronchioles passes through the same stages as occur in membranes lining other cavities or tubes — hyperæmia, congestion, exudation, suppuration, etc.

These processes in the bronchial tubes, however, may induce serious consequences, which would not follow such morbid conditions elewhere. The infiltrated membrane diminishes the lumen of the bronchi, and, if considerable, may produce dyspnœa, or asthmatic breathing. This condition, with a sense of suffocation, is of frequent occurrence in climates productive of acute and sudden attacks of bronchitis, tracheitis and laryngitis. In these cases the stage of exudation is one of relief.

Bronchitis is not a very fatal disease in the United States,

the mortality reaching only about one-seventh of that in England. For instance, in the United States there are about 1,451 deaths from this disease in a total mortality of 100,000, while in England the mortality from bronchitis is 10,586 in 100,000 deaths from all causes. This difference, so favorable to the United States, is due, in part, to the greater density of population in England. Even in the United States there is a great difference between rural districts and cities in this respect, showing that the causes prevail to a greater extent in cities than in agricultural regions. The ratio of deaths from bronchitis in rural districts may be given at 155 per million of population in this republic, and in cities at 561. Undoubtedly some of this difference is due to over-crowding, accumulation of filth, occupation, and improper ventilation in cities, but evidently much of it must be ascribed to the inhalation of coal gas, and other noxious gases and vapors in cities, and the absence of the pure air, and habituation to the weather and its changes which constitute some of the safeguards to a rural population.

The endemics and epidemics of bronchitis, which occur in different places at different times, led many physicians to suspect a bacterial cause long before any investigations had been made to determine this fact. It is now known that bacteria cause this disease, in some instances, even when it does not accompany la grippe. In all influenzas accompanied by bronchitis, bacteria probably sustains a direct causal relation to the disease.

It will be found, by a perusal of the tables given below, that bronchitis is common, and may be said to be endemic, in wet, windy, changeable climates.

It is not most frequent in coldest regions, nor in the warmest, nor yet in the wettest climates. Habituation to exposure diminishes the susceptibility to bronchitis. Acclimatization often has a similar tendency to diminish the mortality from this disease. In the United States, for instance, the mortality from bronchitis among Indians is 10 per 1,000

deaths; negroes, 17 per 1,000, and whites, 28 per 1,000. In some localities, however, as I have learned from private communications, bronchitis prevails largely among the aboriginal population.

Phthisis, on the other hand, is a terrible scourge among the Indians, especially those who have been brought under the influences of civilization, reaching the enormous ratio of 286.99 per 1,000 deaths.

Bronchitis is more fatal in the United States among the whites than among the colored population. Those of Irish parentage are more susceptible to this disease than those of German descent, and it is more fatal in children and those of advanced age than in those of intermediate age. This is due to the rich network of capillaries in the lining of the bronchial tubes, which in children is loosely bound to the muscular wall and lies in folds. The epithelium is easily shed, and readily proliferates. These tissues become more dense after five years. In old people the lessened vitality renders the bronchial mucous membrane more susceptible to catarrhal inflammation.

Most deaths from bronchitis in this country occur in the Middle Atlantic region, New England, Ohio and Missouri River belts, shores of Lakes Huron, Erie and Michigan. The mortality is low in the South Atlantic coast region, South Mississippi belt, Western plains, Western mountain region, central part of Michigan, and northern portion of Wisconsin and Minnesota. It is more prevalent on the Gulf and Pacific coasts than on the adjacent islands. Like catarrhal sore throat, it is more common in the lower lake region and northern inland regions.

In this country bronchitis reaches its maximum mortality in December and March.

The disease in this region is more common in November and December; pneumonia in January and February; and bronchitis prevails again in March, while pneumonia is frequently prevalent in April and May.

Climatic changes affect all mucous membranes, so that various catarrhal diseases of the respiratory organs prevail where bronchitis is marked ; but a study of the tables will show that the mortality ratio is a variable quantity.

From the first table we learn that bronchitis is common in Iceland, Norway, Sweden, Russia, Siberia, England, Scotland, Ireland, Belgium and Canada ; that it is common and fatal in England, Scotland, Ireland, Belgium, Italy, Spain and Portugal. It is less prevalent in Canada than in England, but more fatal, the ratio of deaths being 227 in England to 309 in Canada. The disease is less frequent, or at least less fatal, in France, Switzerland, United States and Mexico. As broncho-pneumonia is usually classed with bronchitis or pneumonia in mortality tables, it will be profitable to compare the death rate from these two diseases. In this way we may determine approximately what countries are most afflicted with broncho-pneumonia. The mortality rate per million living in Norway is, 450 for pneumonia, and 1,805.1 for bronchitis; in England these ratios are 1,012 for pneumonia, 2,464.6 for bronchitis ; in Scotland they are 1,090 and 2,040 respectively ; in Ireland they are 438.5 and 2,315.3 ; in Belgium, approximately, 1,000 and 2,000 respectively ; in France, 2,202.9 and 1,750.9 ; in Switzerland, 1,669.4 and 1,485.8 ; in Spain, at Madrid, they are 2,900 and 4,800 ; in Canada they stand 1,344 and 3,357 ; but in the United States the relation is 1,257 and 337.8. From these figures we should expect to find broncho-pneumonia most prevalent in England, Ireland, France, Spain and Canada, and comparatively rare in the United States.

It is very desirable that mortality tables should record this disease ; but it is well known that officials sometimes, for various reasons, do not record the cause of death as certified by the attending physician.

Broncho-pneumonia is a comparatively fatal disease, and where it prevails its mortality rate is high.

The tables here presented bring into comparison the mortality from laryngitis, croup, influenza, whooping-cough,

pneumonia, broncho-pneumonia, bronchitis, pleurisy, and phthisis. Diphtheria has not been introduced, because, in the cases of that disease, originating in catarrhal inflammation, death rarely results, and a comparison would avail little to instruct us in regard to this class of diseases.

Bronchitis is often present in croup, influenza and whooping-cough, so that it seems fitting that they should be enumerated.

In Eastern Asia, the islands of the sea, Africa and South America, and some countries in the regions represented in these tables, there are no statistics that I could secure, or they were unreliable, and are not detailed here.

In some cases I have used the terms "common" or "rare," as indicated by the authorities I consulted.

The numbers represent the *rate of deaths per million living*, and of course represent the degree of fatality of the disease, rather than the frequency of its occurrence.

The second table includes reports from a few States and cities of the United States. The numbers refer to the deaths per million living as in the first table.

TABLE I.

	Mean Annual Temperature.	Rainfall.	Croup.	Influenza.	Whooping-Cough.	Pneumonia.	Bronchitis.	Pleurisy.	Phthisis.
Iceland	32 to 39	29	Common	Frequent	Very rare	Common	Common	Common	Rare
Norway	40	45	250	Common	513	1450	1805.1	158.4	2500
Sweden	4.5	22	In towns 228	Common	85	In Falun 1800	Common		3500
Stockholm						2180			
Denmark	47	—	Common		662	1700	Mod'rat'ly Common		3042
Russia in Europe—									
Baltic Region	3.67	20.2		Frequent	230	Frequent	Common	Occasional	Frequent
Northern "	1	—	Frequent			Frequent	Most com.	Frequent	8221
Central "	4.5	21.9	Common		Frequent	Frequent	Common	Common	
Southern "	10	4.1	Not rare			Not rare	Not rare	Not rare	Frequent
Germany	8.6	28	Common	Frequent	414	1422	Common	70	2779.5
Austro-Hungary	8.8	33.7		Common	976				3910
England and Wales.	49.4	30.4	170	Common	513.3	1012	2464.6	49	2120
Scotland	46.2	33.1	170		Common	1090	2040	84	2045
Ireland	49.8	Dublin 29				438.5	2315.3		
Netherlands	9.6	18.3	303		340				1977
Belgium	49.8	49.8			Common	Approx. 1000	Approx. 2000		Brussels 5600
France	53.1	25.5	Common	Common	180	2202.9	1750.9		3341.8
Switzerland	47.8	—	Common	Common	240.2	1669.4	1485.8	186.4	2080
Spain and Portugal	60.7	32.7	Excessive and fatal	Excessive and com'n	291	Madrid 2900	Madrid 4800	120	Gibraltar 980
Italy	59.2	28.5	Excessive and fatal	Common	280	Com'on & fatal	Common and fatal		2390
Canada	40	26.7	Common	Common	—	1344	3357	Common	2778.1

TABLE II.

	Mean Annual Temperature.	Mean Annual Rainfall.	Croup.	Influenza.	Who'ping Cough.	Pneumonia.	Bronchitis.	Pleu'sy	Phthis.	Bronch Pneumonia.	Laryngitis.
United States.....	53	40	392.3			125.7	337.8	36.7	2517.6		
East Atlantic Region.	59.3	48.8	230.8			1057.8			2136.7		
Lake Region.....	44.91	28.03	271.6			995.2			1753.8		
Central "	56.66	42.40	452.7			1256.9			1738.3		
Southern Plateau.....	61.19	13.01	302.5			1256.9			1398.8		
Pacific Coast.....	56.5	26.50	120.7			1074.4			2467.2		
South Central Appalachian Region	48	50	814.8			1164.9			1855.2		
Gulf Coast	73	55	271.6			981.5			1105.5		
California—1890.....	57.63	20.44	2519	170.9	80.6	159.4	490	33.1	2576	80.6	
Sacramento—1891-92...	59.2	23.57	107.7	33.3	116.5	1132	333		2264.4	498.5	33.3
San Francisco—'91-92.	55.7	24.03	380		58.3	2003	925		1565	261.6	
Los Angeles—1891-92..	60.5	17.89	107.6		38.4	1166.5	284.5		3037.5		
Illinois—1881-1885.. ...	50.8	40.5	182.9	4.97	65.8	687.3	296.06	12.2	670.4		30.08
Cook Co.—1881-1885....	Chic'go 49	37.34	452.1	4.81	142.2	1148.9	799.2	27.5	1478.8		81.5
Milwaukee, Wis.—1892.	45.1	33.63	327.7	100	330	1602.7	891.5		1380		
Providence, R. I.....	Block 49.6	Island 54.98	118.5	259.2	392.6	1800	866.7	44.4	2740.7	59.2	
Knoxville, Tenn. '91-92	57.5	53.87	272.4		177	1266.6	272.4		2887.4	68.1	38.1
Baltimore, Md.—1892..	55.6	42.26	101.05	408.5	68.8	1758.7	591.2		2423.05		
Denver, Colo.—1892....	49.3	14.99	116.7	75	116.7	941.7	350	33.3	2583.3	133.3	
Buffalo, N.Y.—1891-92.	46.25	38.3	603.7	207.4	127.78	2212.9	653.7	44.44	2027.8	348.1	

It is to be regretted that the numbers in the tables from reports of the United States and Illinois are not complete, and can be considered as representing only the relative frequency of the occurrence and fatality of the diseases named. The reports from cities, I think, may be considered reliable. I present herewith some additional remarks concerning the tables, and a few countries not mentioned in them:

Iceland.—Croup is common; there are 32 deaths from croup per 1,000 deaths. Influenza, local and epidemic, is not uncommon. Whooping-cough is not endemic. Bronchitis is sporadic, and not more frequent than in Southern Europe. The same may be said of pneumonia.

Norway.—Croup is a fatal disease, and occurs at all seasons, especially in the cold months. Croup causes 1 in every 66 deaths — in England, 1 in 112 deaths — so that it is nearly twice as fatal in Norway as in England; the fewest deaths occur in autumn.

Whooping-cough is common. Influenza not so frequent as in Iceland. Acute bronchitis caused (1886–7) 3.6 per cent.

of mortality; chronic bronchitis 2.1 per cent.—5.7 per cent. for both forms. In England, 10 per cent. or more of mortality is due to bronchitis.

Broncho-pneumonia is of common occurrence, but this disease is less fatal than in England. Bronchitis is a town disease; most cases occur in the southern portion; possibly due to the difference in humidity. Greatest mortality in cold months — January, February and March; least in July, August and September.

Sweden.—Croup is frequent and fatal; most common in the northern part, and more fatal in the north than in the center. Influenza is as frequent as in other European countries. Whooping-cough is common, and 5 per cent. of the cases are fatal; occurrence in spring, 21.8 per cent.; summer, 28.2 per cent.; fall, 29.4 per cent.—20.6 per cent. Bronchitis is common, and pneumonia more common than in England; hence, we should expect many cases of broncho-pneumonia. In the interior bronchitis constitutes more than 20 per cent. of all diseases treated.

Denmark.—Whooping-cough is one of the most fatal diseases of childhood. Bronchitis is less fatal than in many countries of southern Europe. Pneumonia is as common as in northern Europe generally.

Finland.—Croup is frequent, pneumonia common, and bronchitis likewise frequent.

Russia in Europe.—In the Baltic Provinces the pandemics of influenza originate and spread southward and westward. Bronchitis is common in winter. Pneumonia, which is moderately prevalent in winter, is common in spring.

Northern Russia.—Croup is frequent. Bronchitis is one of the commonest maladies, and pneumonia is frequent.

Central Russia.—Croup is somewhat prevalent, especially in the western portion. Bronchitis is next in frequency to pneumonia, and both are common.

Southern Russia.—Croup, bronchitis and pneumonia are less frequent than further north.

Germany.—Croup is more frequent than in any other European country, except Austria. Influenza is common, passing westward. Whooping-cough is one of the most dangerous diseases in Saxony and Baden. It is more fatal in large than small towns. Bronchitis is less fatal in Germany than in England. Most frequent in Potsdam, Arnesberg, Schleswig, Stralsund, Magdeburg and Dusseldorf. Least so in Posen, Bromberg, Gumbinnen and Munster. Most fatal in large towns.

Austro-Hungary.—Croup is frequent. Influenza is common. Whooping-cough is more fatal than in Germany and England. Bronchitis is more common than in England, and the same may be said of pneumonia.

England and Wales.—Croup is most fatal in London; more fatal in females than in males, and prevails most from December to May. There is less influenza than bronchial catarrh; but there are some cases of local influenza. Pneumonia prevails. Bronchitis takes the first place among causes of death in England, and the death rate is still increasing; it is most fatal below five years and above fifty-five. From five to fifteen it occurs most frequently in females; at other years it is most fatal in males. In warm years the mortality is low; in cold years it is high—November to April high; May to October low, in the ratio of 990 to 367. In croup, mortality is more common in the west than in the east side of England. Bronchitis is most common in the south and southwest; least common in the north and northeast generally; but the limits are variable.

Scotland.—Croup is as common as in England, and pneumonia more so. Bronchitis is less frequent than in England; as in other countries, it is less fatal in rural districts.

Ireland.—Pneumonia gives less than half the rate of mortality of this disease in England, the ratio being 438.5 to 1,012 per million of population. Bronchitis is also less, 2,315 (1878–81) to 2,464.6 (1875–9) being the ratio.

Netherlands.—Croup is most prevalent in Overyssel and Friesland; rare in Limburg and Gröningen. Whooping-cough is less fatal than in England, the ratio being 32 to 46. Acute respiratory diseases are twice as fatal and frequent as the chronic forms.

Belgium.—Croup is prevalent, but bronchitis is less frequent than in England. The occurrence of pneumonia, however, is about equal to that in England. Whooping-cough occurs about as in other countries of Europe.

France.—There is a heavy mortality from croup. Whooping-cough is not fatal. Pneumonia and broncho-pneumonia are more fatal in the south than in the north—north of 48 deg. the ratio being 1,919.9; south of 45 deg., 2,655 per million; in England 1,058 for the same time. Bronchitis has a death rate of 2,291 in London, while it is but 1,711.7 in thirty great towns of France. The rate is less in the north than in the south, the ratio being as 1,660.8 to 1,714.1. Acute bronchitis, chiefly in infancy and childhood, caused 669 deaths per million in the north, 819 in the south, and 719.6 in the middle region. Chronic, 991 north, 1158.17 middle, 895.3 south, per million. Combining, we find the rate of deaths from respiratory diseases in France to be 3,809; in England, 3,349.

Switzerland.—Croup prevalent. Whooping-cough moderately fatal. Pneumonia, 1,669.4—England, 1,058. Greatest mortality not in cities, as in England. Bronchitis less prevalent in country than in town. Acute, 486.4; maximum in March. Chronic, 999.4 per million.

Southern Europe—Spain and Portugal.—Croup very prevalent and fatal. Influenza not peculiar. Whooping-cough moderately prevalent. Pneumonia, 2,900 per million, and bronchitis 4,800 in Madrid. Tablelands suffer more than coast line—north than south—towns than country. Bronchitis reaches its maximum in December and January; pneumonia in February and March.

Italy.—Croup more prevalent than in England. Whoop-

ing-cough is comparatively rare. Bronchitis, pneumonia and pleurisy give a combined death rate of 4,610 per million. They are cold weather diseases, reaching the maximum in January, February and March, and the minimum in September.

Greece.—Bronchitis is of a milder type than in the north of Europe. Respiratory diseases less fatal (and frequent) than in England.

European Turkey.—Croup occurs. Chest affections in Constantinople are as frequent and common as in the larger towns of Europe.

North and Western Asia—Siberia.—Influenza frequent, besides general epi- and pandemics. Croup not frequent. Whooping-cough rare and benign. Bronchitis, etc., prevalent.

Mongolia.—Influenza, or "catching colds," frequent.

Corea.—Bronchitis is frequent, but pneumonia is rare. Asthma is a frequent disease.

Asia Minor.—Bronchitis and other catarrhal affections especially prevalent in Armenia. Pneumonia occurs frequently on the plains of Troy.

Syria.—Bronchitis is frequent, but pneumonia rare at Beyrouth.

Mesopotamia.—Bronchitis not rare in winter.

Arabia.—Bronchitis rare on coasts, common on plateaus.

Persia.—Croup rare. Bronchitis and pneumonia prevalent in winter and spring.

Asia—India.—Whooping-cough occurs at long intervals; it is mild. Croup not very frequent. Chest affections increase in frequency and fatality westward and northward. Bronchitis is more frequent in Lower Bengal and Assam than elsewhere. Pneumonia most frequent and fatal in places of greatest temperature change—Rohilcund and Meerut. Bronchitis is the most fatal of respiratory diseases, actually; but not in proportion to cases treated.

Ceylon.—Death rate from bronchitis, 412 per million; very much less frequent than in England, but more frequent

than in the United States. Pneumonia not very frequent, but severe. Whooping-cough is found occasionally.

Burma.—Bronchitis is moderately prevalent, and the same may be said of pneumonia.

Southeastern Asia—Malayan Peninsula.—Bronchitis very rare; aud the same may be said of all respiratory diseases. No deaths from bronchitis.

Indo-China—Siam.—Bronchitis is common among both natives and strangers.

Cambodia.—Bronchitis moderately common; pneumonia rare.

China.—Influenza frequent. Bronchitis and pneumonia frequent in north China. Bronchitis is more common in the southeastern provinces, and most cases occur in spring.

Hong-Kong.—Chest affections cause a death rate of 2,438 per million. Most fatal in October and November.

Japan.—Bronchitis is common in all parts, and particularly fatal to children. Most common in spring and summer.

Sumatra.—Bronchitis and catarrh are frequent. Well marked pneumonia is very rare.

The Riouw Archipelago.—Catarrhal diseases frequent.

Borneo.—Whooping-cough prevails. Bronchitis is of frequent occurrence, and pneumonia rapidly assumes the asthmic form.

Java.—Bronchitis and other catarrhal diseases of the lungs are rare.

Philippine Islands.—Bronchitis frequent. Pneumonia, influenza and whooping-cough rare.

Australia.—Influenza sometimes prevails. Whooping-cough, 190 per million, less than one-half the death rate of England. Low death rate from bronchitis; less than one-third that of England. Pneumonia more frequent but less fatal than that of England. Congestion of lungs common in both native and foreign population.

Tasmania.—Influenza frequent; also occurs in animals—

dogs. Bronchitis more frequent than pneumonia — 660 to 576.

New Zealand.—Whooping-cough is moderately fatal—less than half that of England — 277 per million. Croup less fatal than in Australia (N. Z. 125.6), and less than one-third as fatal as in the United States. Bronchitis, 459.4 per million. Pneumonia, 398.

Polynesia.—Influenza spread by trade winds, chiefly from east-southeast. Bronchitis rare. Pneumonia more frequent.

New Caledonia.—Whooping-cough and influenza both occur. Bronchitis and pneumonia, and other respiratory diseases, are the most fatal of all diseases among the natives.

Society Islands.—Influenza occurs. Bronchitis and pneumonia not rare.

Hawaiian Islands.—Influenza frequent. Whooping-cough rare. Pneumonia and bronchitis frequent.

Marquesas Islands.—Bronchitis is common.

Africa — Morocco.—Respiratory diseases comparatively rare.

Algeria.—Bronchitis was one of the fatal diseases in 1888 —2156 deaths per million, of which 1,104 were acute, and 1,052 chronic. England, 1,971; France, 1,711.7. Native civil population most affected. Broncho-pneumonia and pneumonia occur. In 1688 these two formed a death rate of 2,751 per million. Respiratory diseases are excessively fatal in Algeria, contrary to what would be expected.

Tunis and Tripoli.—Bronchitis and pneumonia are seldom met with.

Egypt.—Respiratory diseases are rare. The Military Report gives 295 to 1,000 admission, and 1 to 1,000 deaths.

Senegal—Sierra Leone.—Respiratory diseases are common among the natives.

Coasts of Guinea.—Respiratory diseases probably rare, unless among the natives.

Congo.—Respiratory diseases are rare among Europeans, and frequent among natives.

South Africa—the Cape.—Respiratory diseases are comparatively rare. Bronchitis, 20 per 1,000 admissions, 18 per 1,000 deaths. Pneumonia, 32 per 1,000 admissions, and 114 per 1,000 deaths.

Natal and Zululand.—Bronchitis especially rare.

Bechuanaland.—Whooping-cough is common but mild. Croup occasionally occurs and is relatively fatal. Bronchitis and pneumonia are rare and mild.

East Africa—The Coast Region.—Whooping-cough uncommon. Bronchitis comparatively rare and mild. Pneumonia and pleurisy more frequent, especially at the beginning of the rainy season.

South Central and East Central Africa.—Whooping-cough sometimes epidemic. Bronchitis and pneumonia prevail. Coughs occur frequently (Livingstone). Bronchitis is common in some places—Mpwapwa—but pneumonia is rare. Catarrh during the cold season. Pneumonia common in Upper Nile basin. Influenza occurs at the end of the rainy season.

The Western African Islands—The Azores, Madeira.—Bronchitis is common and mild. Pneumonia, low and asthenic, is frequent and fatal. Respiratory diseases common among laboring classes.

Canary Islands.—Bronchitis and pneumonia are excessively common, but not correspondingly fatal.

Cape Verde Island.—Bronchitis, catarrh and pneumonia are "maladies of all seasons and all localities."

St. Helena.—Respiratory diseases common and fatal; 92 per 1,000 deaths.

Lesser East African Isles—Zanzibar.—Bronchitis is less common than in Europe, but frequent in March and April.

Madagascar.—Influenza sometimes. Bronchitis and respiratory affections in adults rare. Acute bronchitis and broncho-pneumonia common and fatal among native children in cold season. Less frequent on the coast than in the interior.

Mauritius.—Bronchitis, colds and catarrhs rare. Pneu-

monia comparatively so, but excessively fatal in some fever localities.

North America—Greenland.—Influenza prevalent in autumn ; and the same may be said of pneumonia and pleurisy. They occur in both natives and Europeans.

Sitka, Pacific Coast.—Pneumonia and pleurisy are more prevalent than in England ; 60 to 52.

Labrador. — Whooping-cough has been known since 1875–76.

Canada.—Respiratory diseases, but not throat trouble, prevalent on Atlantic Coast, where they are most fatal. They prevail less in the interior of Canada than in England. Bronchitis is less prevalent, but more fatal, and pneumonia more prevalent and fatal, than in England. Croup is common in the eastern provinces.

Newfoundland.—Bronchitis and other respiratory diseases, very common.

United States.—Influenza prevails extensively. Croup prevails most in eastern portions of Nebraska, Dakota, Wyoming, Oregon, mountains of Virginia, Kentucky, North Carolina, Tennessee and Georgia. Least in New England, Southern Atlantic Coast, Gulf Coast, Rocky Mountain Region—except as above—Texas, Mississippi, Ohio and Missouri River Belts. Bronchitis is a subordinate disease in the United States, scarcely one-seventh as fatal as in England. Pneumonia gives a death rate of 1,257 per million living. Bronchitis 155 in rural districts, 561 in cities. Bronchitis is rare along the Atlantic, Gulf and Pacific Coasts, shores of Lakes Ontario and Erie, and in Michigan, South Central Appalachian Regions, interior plateau and heavily timbered regions of the Northwest. Most frequent and fatal in Southern interior plateau, South Mississippi River Belt, North Mississippi River Belt, Southwest Central Region, Central Plains and Prairies, Prairie Regions, Mississippi River Belt, Western Plains and Cordilleran Regions. Among the Indians 10 deaths (or 1 per cent.) per

1,000 are due to bronchitis; among the whites 28; among the colored, 17. Pneumonia furnishes a mortality among Indians of 101 per 1,000 deaths ; among the whites, 109 ; colored, 141. Phthisis : Indians, 288 ; whites, 167 ; colored, 187.

Mexico.—Pleurisy frequent on plateau. Pneumonia frequent and fatal.

Central America.—Pneumonia occasionally among old and weak in winter.

Costa Rica.—Bronchitis is common on the tableland. Whooping-cough first known in 1866. Pneumonia is comparatively rare.

Panama.—Diseases are similar to those of Costa Rica, except that pneumonia is more frequent.

West Indies—Bermudas.—Bronchitis and other respiratory diseases comparatively rare.

Bahamas.—Bronchitis is rare, 1.9 representing the death rate per 1,000 ; pneumonia, 3.5.

Cuba.—Bronchitis rare, and most common among the negroes. Pneumonia frequent.

Jamaica.—Whooping-cough rare and mild. Bronchitis gives a death rate of 388 per million living. Pneumonia, 962.

Puerto Rico.—Croup occurs occasionally. Bronchitis and other catarrhal affections frequent in winter.

Trinidad.—Bronchitis, tracheitis and laryngitis are moderately frequent.

South America—British Guinea.—Bronchitis rare and mild. Pneumonia more frequent.

Surinam, or Dutch Guiana.—Bronchitis and other respiratory diseases rare.

French Guiana.—Bronchitis common among the colored inhabitants; pneumonia the same. Croup rare.

Brazil.—Influenza, local and epidemic, frequent in winter and spring. Bronchitis more frequent in southern provinces than further north ; but is not marked by frequency or fatality anywhere. Pneumonia common.

Ecuador.—Bronchitis is very common.

Peru.—Pneumonia very common along the coast.

Sierra.—Bronchitis and pneumonia are very common.

Chili.—Bronchitis is common. Pneumonia causes 189 per 1,000 deaths.

Argentine Republic, Uruguay, Paraguay. — Bronchitis common. Pneumonia one-third as fatal as in Chili.

The relation of bronchitis to other diseases of the respiratory organs is very well illustrated by the tables. A careful study of these tables and the relative frequency of the occurrence of other diseases with bronchitis will justify the opinion that a larger number of respiratory diseases have their origin in bronchitis than is usually granted; that broncho-pneumonia is of more frequent occurrence than statistics indicate; and that many cases, reported as bronchitis or pneumonia or congestion of the lungs, might be correctly named broncho-pneumonia. Another fact is observed also, and that is, the great difference between the death rate from bronchitis in the United States and the actual number of cases of this disease which we meet in our practice.

There is a close relation between nasal catarrh and pharyngitis and bronchitis, but I have no statistics to assist in determining the numerical relation. H. Gradle and others have assured me that they have frequently observed a bronchitis apparently resulting from an extension of nasal catarrh, or at least bearing a consecutive relation to that morbid condition. This is especially likely to be observed in chronic bronchitis. I have made the same observation, and have also seen many cases of acute nasal catarrh, or catarrhal pharyngitis, followed in a few hours or days by an acute bronchitis. In some cases I have observed these cases to pass into a broncho-pneumonia.

Another comparison worthy of mention has reference to the months of maximum and minimum frequency of these diseases.

Croup is most frequent in London from the middle of November to the end of April, the absolute maximum being,

according to Richardson, in February and March. The absolute minimum occurs in the middle of June to the middle of August.

In New York the maximum is reached during the months of November and December.

Laryngitis attains its maximum in London during the last three weeks of March ; minimum, the second week of September.

Bronchitis reaches the maximum of frequency and fatality, in London, in the second week of January, and the minimum is attained in August. In New York the maximum is attained in the middle of March, and the minimum the first week of August.

The whole number of deaths from bronchitis, in New York, is but one-twentieth of the total mortality, while in London it is one-eighth.

Pneumonia reaches the maximum in London in December, and is most frequent from November to April ; the absolute minimum is in August. In New York pneumonia is frequent from November to the middle of May, the absolute maximum occurring in March ; minimum in July and August.

Phthisis is fatal from the middle of November to the middle of June, in London, reaching the maximum in the middle of March ; the minimum, the fourth week of September. The death rate is about the same as that of bronchitis.

In New York phthisis is fatal from the middle of December to the middle of May, the absolute maximum occurring in March. The minimum is in June. The deaths here from this disease are about one-seventh the total mortality.

Pleurisy occurs most frequently in London during the time from the middle of November to the second week of June, the absolute maximum being reached in December and January. The minimum is attained in July and August.

In London influenza prevails from November to April, except in February.

Whooping-cough reaches its maximum in London during

February, March, and first half of April; the minimum in September and October.

In New York there are two maxima, September and February, and two minima, November and June.

In the treatment of bronchitis, we do not usually give sufficient prominence to medicated inhalations and sprays. These may be applied with atomizer, nebulizer, insufflation of finely divided powders, or by means of medicated steam. Some of the best agents to be thus used are subnitrate of bismuth, in powder or combined with eucalyptus in liquid; camphorated tincture of opium and carbolic acid in steam; alcohol and camphor or menthol by inhalation; astringents and the essential oils by atomization or nebulization. Cough mixtures, containing anodynes and expectorants are essential, but are usually simple palliatives. Otherwise the treatment should be conducted in accordance with general principles. I usually direct that the chest shall be enveloped with cotton batting, after bathing in alcohol and anointing with camphorated oil or oil of cocoanut. The application is to be changed every eight or twelve hours.

Patients who suffer from chronic bronchitis should be advised to go out into the fresh air every suitable day.

Abundance of fresh air, and moderate out-door exercise, are especially to be recommended in patients who have a tendency to bronchitis, or a catarrhal diathesis.

DISCUSSION.

Dr. R. H. Babcock, Chicago:

It seems to me that these figures are utterly bewildering, and the Doctor deserves great credit for the patience with which he has collated them. They furnish interesting and instructive data. I was particularly struck with the great difference between the mortality in England and the United States from bronchitis; and yet it seems to me, when we consider certain conditions with reference to the etiology of this disease, and certain other conditions referable to geographical conditions, that it is not so strange. It is

well known that bronchitis prevails in manufacturing communities and among peoples who are housed in great cities, and communities in England have exactly the conditions that are favorable to the development of bronchitis, since they are, *par excellence*, a manufacturing people, and there are very many large cities in England in which the people are huddled very closely under very unhygienic conditions. Furthermore, England is a country in which gout prevails with great frequency, and it is well known that gout is one of the predisposing factors in the causation of bronchitis; probably the condition of the heart in gout has much to do with the predisposition to bronchitis. The people dwelling in the cities in England inhale much smoke and dust from their occupations, and this, together with climatic conditions, would favor the production of bronchitis. However, the difference between England and this country cannot be wholly explained by difference of occupation—the geographical conditions must have an influence; England lies wholly in the temperate zone, and it is in that zone that bronchitis predominates. This country has a much more diverse climate than England, and it seems to me it would be well to compare these statistics of bronchitis in England with those of our middle Atlantic States, in which the climatic and some of the other conditions are not so different from England. Another fact that struck me as very peculiar was that although bronchitis prevails especially in temperate zones, Italy and Spain suffer very greatly from it.

Then I was struck with the fact that ten per cent. of the Indians suffer with bronchitis as against twenty-eight per cent. of the whites. It seems to me this bears directly on the etiology of the disease, for it is known that exposure does not necessarily predispose to bronchitis, provided the individuals exposed are robust; in fact, life in the open air seems to protect against catarrhal diseases. The Indians live not huddled in communities as we do here in Chicago, inhaling dust and smoke and gas, etc.; they do not work in manufactories; they are not reduced by unhygienic surroundings, but they live in the air, which tends rather to harden their mucous membranes against the effects of changeable climates. Many more things might be said which these facts bring out, but statistics are notoriously unreliable, and perhaps it is hardly worth while to dwell on them further.

Dr. Ephraim Ingals, Chicago:

Dr. Carter tells us the North American Indians seldom have bronchitis, but are very subject to tuberculosis. I do not understand why they should be so exempt from bronchitis, but I presume they contract tubercle by using freely—as they doubtless do—the milk from their numerous flocks and herds without sterilization.

We are frequently warned, in late years, of the great danger of using milk that has not been carefully sterilized.

Dr. J. M. G. Carter, Waukegan, closing the discussion, said:

I have little to say in regard to the point made by Dr. Babcock as to the slight mortality of the Indians, who are yet constantly exposed. It is a known fact that those who are habituated to exposure are less liable to contract a disease arising from exposure. Dr. Babcock referred to a point which I did not attempt to cover in my paper in regard to the influence of the manufactories of linen and cotton, and other materials, where girls are engaged, and that are thought to be harmless. The great influence of these manufactories upon the production of bronchitis is especially illustrated in England. Another point that troubles me as much as it does Dr. Babcock is the frequent occurrence of bronchitis in certain mountainous regions, and then again its frequency in certain low regions. England is a low country, but so are some of the States of this country and South America, where they are comparatively free from it, and yet in others many cases are reported.

In regard to the small percentage of bronchitis and the large percentage of tuberculosis among Indians, I will state that in their original state we know very little about the Indians, but in those who have come under the influence of civilization it has been found that only ten deaths occur from bronchitis out of every one thousand deaths, while among the whites there are twenty-eight deaths from bronchitis out of every one thousand deaths. In regard to phthisis, it is said to be increasing only among those Indians who are brought in contact with civilization; it is probable that the cause of tuberculosis in the Indians is their contact with the whites and consequent exposure to the bacillus tuberculosis.

RHINITIS IN CHILDREN: ITS VARIETIES, CAUSES AND TREATMENT.

BY W. E. CASSELBERRY, M.D., CHICAGO.

The forms of rhinitis which affect children are, in the main, subject to the same classification as when affecting adults. Various phases of the disease, however, both in pathology and clinical history, assume in childhood different degrees of importance, by reason of special tissue proclivities which are incidental to early life, and of unusual damage liable to ensue in a child, from neglect of the disease during the developmental period. The treatment also requires special adaptation to the comparative helplessness and timidity of young children.

Acute Rhinitis.—Acute rhinitis, colloquially termed "cold in the head," is an acute inflammation of the mucous membrane lining the nasal cavities from the anterior nares to the naso-pharynx. It is prone to extend to adjoining mucous surfaces, and usually embraces the naso-pharynx, at least to some degree, and thence not infrequently also the middle ear.

Etiology.—Reasoning from analogy, one must regard acute suppurative rhinitis as an infection by pathogenic micro-organisms, but it is a result of "taking cold," which follows certain exposures with such regularity and precision that one must also infer a casual relationship to exist between chilling of the body and rhinitis. The congestion of the nasal vessels occasioned by "taking cold" evidently favors a microbic invasion of the mucous membrane, by in some manner, impairing its powers of resistance.

Instances are not wanting of direct infection of one person by the discharges of another, an accident which is apt to happen among children by the use of handkerchiefs in common. Suppurative rhinitis of infants is also attributable to direct infection from the vaginal discharges during birth, and to want of cleanliness after birth.

TREATMENT.—It is much too customary to permit this acute inflammatory disease of a delicate part of the body to progress without efforts to mitigate and abbreviate it. Such a course is fraught with immense possibilities of ultimate damage, chronic catarrh of the nose and accessory organs being thereby established. Many remedies are of real service, but a multiplicity of recommendations is confusing and tends to lessen confidence in any one line of treatment. I will therefore describe simply my own methods of dealing with these cases.

If it is sought to abort the attack of rhinitis, a single average-size dose of Dover's powder proportionate to the age of the child, is given at bedtime, also a laxative if needed. The patient is especially well covered in bed, outside night air is excluded, and the temperature of the apartment maintained during the night at 60 to 64 deg. F., but no effort is usually made to produce profuse perspiration.

Internally, the following formula will meet the indications:

℞ Tr. aconiti, 12 m.; Tr. belladonnæ, 24 m.; Morphinæ sulphatis, ¼ gr.; Potassii bromidi, 1 dr.; Spts. menthæ piperitæ, 20 m.; Aquæ g.s. ad., 3 oz. M. et Sig.

Adult dose, one teaspoonful every hour, to be lessened for children according to age.

The same ingredients could readily be prepared in the form of a capsule, pill, or compressed tablet.

Local treatment is of the utmost importance, and the following mixtures render satisfactory service by atomization:

℞ SPRAY No. 1.

Cocainæ hydrochloratis, 2 gr., Sodii boratis, 20 gr.: Sodii bicarbonatis, 20 gr.; Ol. eucalypti, 1 m.; Ol. gaultheriæ, 1 m.; Thymol, 1 gr.; Menthol, ½ gr.; Glycerinæ, ½ oz.; Aquæ q.s. ad. 1 oz.

M. et Sig. Dilute, adding one or two teaspoonfuls to one ounce of warm water for use as a spray.

℞ SPRAY No. 2.

Cocainæ hydrochloratis, 2 gr.; Ol. pini canadensis, 5 m.; Ol. gaultheriæ, 2 m.; Ol. eucalypti, 2 m.; Thymol, ½ gr.; Menthol, 1 gr.; Vaselin oil, 1 oz.

M. et Sig. Use with double bulb (Davidson) atomizer, either alone or following the use of spray No. 1.

For young children who are often terrified by spraying, may be substituted a small syringe or an ordinary medicine-dropper used as a syringe, with which to project, gently, either of these solutions through the nostrils. Spraying or gentle syringing in this manner, may be performed twice or three times daily, or even every three hours in severe cases. The cocaine can be omitted from either spray formula, if there is any objection to its use, without seriously impairing the effectiveness of the remedy. All solutions for nasal use should be somewhat warm.

Of the many inhalations, I will mention only camphorated steam, as a domestic remedy of power. It is conveniently used by placing a pint of steaming-hot water in a glass fruit-jar, and adding two fluid drachms of spirit of camphor. A funnel, preferably of glass, is then inverted to cover the mouth of the jar, and the rising steam is inhaled through the nostrils as it escapes from the small end of the funnel. So used, especially during the evening for a half hour, it conduces to a comfortable night's rest and facilitates recovery.

SIMPLE CHRONIC RHINITIS, INCLUDING "PURULENT RHINITIS OF CHILDREN."

Recurrent attacks of acute rhinitis establish in children and young people especially, a chronic inflammation

of the mucous membrane, which is characterized by variable degrees of proliferation of the epithelium, and by mucu-purulent secretion, which is often profuse. The disease is not accompanied by material enlargement of the turbinated bodies or distension of the erectile tissues, and stenosis is not a prominent symptom which differentiates it from hypertrophic rhinitis.

Etiology.—Bosworth plausibly contends that children are particularly prone to inflammation of the epithelial lining of mucous membranes, and that the epithelial proliferation of muco-lymphoid glands becoming organized without desquamation, accounts for enlargement of the tonsils, etc., while an allied inflammation in the nose with rapid desquamation of the epithelium constitutes the most important element in purulent rhinitis. The disease bears no constant relationship to scrofula, tuberculosis or syphilis, since it affects children who are otherwise robust, quite as frequently as it does the subjects of these dyscrasial. Inattention to hygienic matters, leading to frequent attacks of acute rhinitis, and failure to treat the same effectively, are potential factors in the establishment of this form of catarrh.

Symptomology.—A profuse muco-purulent discharge from both nostrils, swelling and redness of the external nasal appendage, and excoriation with incrustation of the anterior nares are the chief manifestations, a too profuse discharge being the sole complaint in the milder cases.

In the course of years, if the purulent type of rhinitis be not arrested, the mucous glands atrophy, the secretion grows less, but thicker, and tends to accumulate in crusts. In other words, the disease may pass gradually into the atrophic form of rhinitis which is the successor to purulent rhinitis, perhaps more frequently than it succeeds hypertrophia rhinitis, although commonly credited to the latter disease.

Simple chronic rhinitis, however, does not always assume a purulent type, the chief symptom oftentimes being merely a

too profuse mucous discharge. This form of the disease is prone to pass gradually into hypertrophic rhinitis; in fact, it is sometimes difficult to draw a distinct diagnostic line between either the purulent or non-purulent form of simple chronic rhinitis on the one hand, and hypertrophic rhinitis on the other. Indeed, in rarer instances these conditions are seemingly associated.

Treatment.—In the purulent type muco-pus must not be permitted to accumulate and decompose in the sinuosities around the turbinated bodies, thus perpetuating the disease. In not too inveterate cases, thorough cleansing by means of an antiseptic alkaline and mildly astringent spray, used three or four times daily, with a hand ball atomizer, is all that is necessary to effect a cure. The following modification of Dabell's solution answers this purpose admirably:

℞ Sodio boratis, 15 gr.; Sodii bicarbonatis, 15 gr.; Ol. eucalypti, 1 m.; Ol. gaultheriæ, 1 m.; Thymol, 1 gr.; Menthol, ½ gr.; Glycerini, 1 oz.; Aquæ g.s. ad. 1 oz.

M. et Sig. To be diluted, adding two teaspoonfuls to one ounce of warm water for use as a spray.

If a more active astringent is necessary to check the hypersecretion, sulpho-carbolate of zinc, two to five grains to the ounce, may be used as a spray, following the cleansing solution.

In young children who are terrified by spraying, these solutions, well warmed, can be used by means of a small syringe.

When the purulent type of the disease is complicated by the presence of hypertrophy of the turbinated bodies, deformity of the septum, adenoid vegetations, etc., any of which obstructions will impair the drainage, and cause a muco-purulent discharge, surgical treatment appropriate to this special cause or complication is usually indicated. However, the case would not then be regarded, strictly speaking, as one of simple chronic rhinitis.

HYPERTROPHIC RHINITIS.

This is a chronic inflammation of the mucous and submucous tissues of the nose, characterized by enlargement, especially of the turbinated bodies, which encroach upon the normal lumen of the nostrils, and cause impairment of nasal respiration and drainage. The disease is thought to be rare with children, especially under ten or twelve years of age, but I am convinced that a mild form or early stage of the affection is very common at all ages.

In children and adolescents persistent enlargements of the turbinated bodies can and do present themselves, in consequence of mere dilatation and engorgement of the vessels of the submucosa, without any considerable degree of cell proliferation, but in addition to this "intumescent form," even somewhat advanced grades of hypertrophic rhinitis are certainly met with in children.

Etiology.—The most prolific source of hypertrophic rhinitis in young children is adenoid vegetations, which, by partial occlusion of the posterior choanal, interfere with the proper drainage and evaporation of nasal secretion, the irritation of retained and decomposing secretions serving to excite proliferative changes in the nose.

Clinically these conditions are frequently conjoined, and it is certain that they sustain some dependence upon each other, for removal of the "adenoids" is often followed by subsidence of the nasal hypertrophics. Recurrent acute rhinitis is another potent factor in the development of hypertrophic rhinitis.

Symptomatology.—Nasal stenosis or obstruction on one or both sides is the most prominent symptom.

The secondary results of nasal stenosis are a nervous restlessness, which is excited in many by the sense of obstruction and pressure in the nose, inability to sleep soundly at night, or intellectually to apply themselves persistently by day, together with headache and reflex pressure symptoms, such as hemicrania, asthma and spasm of the glottis. The most fre-

quent of the reflex nasal symptoms in childhood, are asthma in association with bronchitis, and spasm of the glottis in association with laryngitis; in fact, so common in children is dependence, at least in part, of chronic bronchitis with asthmatic symptoms upon nasal stenosis and adenoid vegetations, that the closest scrutiny and attention should be given to the upper respiratory tract in all such case.

The term "reflex" is doubtless often misappropriated, yet it has a definite significance, and the pathological reflexes which originate in nasal or naso-pharyngeal irritation and terminate in cough, laryngeal spasm or asthma, follow much the same pathway as the physiological reflex known as sneezing.

A very annoying symptom, and one which may first attract attention, is dysphonia, in fact, such children are constantly declared to be tongue-tied, and the lingual præmme cut, without benefit, when the real defect in speech lies in occlusion of the nares or naso-pharynx.

Treatment.—When dependent upon adenoid vegetations, the surgical removal of these growths usually results in subsidence of the hypertrophic rhinitis. Resolution will be favored in such cases, however, as well as in the milder forms of the disease, not secondary to naso-pharyngeal adenoid hypertrophy, by the use, twice daily, of an antiseptic alkaline and mildly astringent spray, or lotion formulated as described.

For simple "chronic rhinitis" this is especially important as a cleansing measure in cases in which some degree of hypertrophy is conjoined with the suppurative type of rhinitis. Refined petrolium products variously known as "aboline," "lavoline," "benzoinol," etc., are just now extensively employed in many combinations, in all forms of rhinitis, but antiseptic alkaline aqueous solutions are certainly more effective when the parts are to be cleansed of muco-purulent accumulations; petroleum sprays are, however, often soothing and protective to the parts, especially at times of acute and sub-acute exacerbations, and may be used in such cases

following the aqueous spray, twice daily, or used alone with patients who have no retained muco-purulent secretions. "Vaselin-Oil," being more viscid than the whiter products, and yet sufficiently fluid to be converted into spray by a good double bulb hand-atomizer, is best adapted to this use, and may be prescribed in the following combination:

℞ Ol. pini canadensis, 5 m.; Ol. gaultheriæ, 2 m.; Ol. Eucalypti, 2 m.; Menthol, 1 gr.; Thymol, ½ gr.; "Vaselin Oil," q.s. ad. 1 oz.

M. et S. Use with a double bulb atomizer. A more astringent spray is occasionally beneficial, although strong astringents are not well borne by the nasal mucous membrane.

℞ Zinci sulphocarbolatis, 5 gr.; Sodi, 1 gr. Potasii Iodidi, 2 gr.; Menthol, 1 gr.; Ol. gaultheriæ, 3 m.; Glycerini, 1 oz.; Aquæ q.s. ad. 1 oz.

M. et. S. Use with atomizer.

Note. Vaselin oil or albolene can be substituted for the glycerine and water of this formula.

Persistent use of these remedies together with the surgical removal of adenoid vegetations and enlarged faucial tonsils, and hygienic guards to prevent frequent "colds," will effect a recovery in the majority of cases of hypertrophic rhinitis of children. A minority, however, which includes especially the older children, will not yield to this treatment and will require reduction of the hypertrophy by means of the electro-cautery in order to overcome the nasal stenosis. One should not hesitate to adopt this method in suitable subjects, for the results are very satisfactory.

ATROPHIC RHINITIS.

Atrophic Rhinitis, also termed cerrhotic rhinitis, dry catarrh, ozæna and fœtid rhinitis, is characterized by atrophy and cerrhotic changes in the nasal mucous and sub-mucous tissues, including the turbinated bones, which lead to increased spaciousness of the nostrils; also by atrophy with impairment of function of the mucous glands, by reason of

which the muco-purulent secretion becomes inspissated and accumulates in the form of crusts, which in turn undergo decomposition and occasion fetor.

Etiology.—The commonly accepted theory that atrophic rhinitis is a sequel to hypertrophic rhinitis, a late stage of that disease, is now receiving much adverse criticism. It is true that an *apparent* transition is occasionally observed, but that the previous hypertrophy was the real and essential cause of the subsequent atrophy, is exceedingly doubtful. I have observed the two conditions to exist at the same time in the same individual, atrophy in one nostril and hypertrophy in the other, and even atrophy and hypertrophy in different parts of the same nostril, but the only cases in which I have observed distinct hypertrophy to pass definitely and completely into the atrophic condition, were those affected with grave constitutional disease, notably tuberculosis and syphilis.

The average life histories of the two affections are dissimilar. At least, one form of atrophic rhinitis is common in childhood, and the disease rarely originates after 35 or 40 years of age.

Hypertrophic rhinitis with permanently organized infiltration of a degree sufficiently advanced to pass, as alleged, into the atrophic state, does not commonly occur, at least, until maturity; hence, this theory fails to afford an adequate explanation of the many cases of atrophic rhinitis which occur in early life.

Bosworth has advanced the most rational explanation of the etiology of atrophic rhinitis of early life, in designating "suppurative rhinitis of children" as the real cause, a view which harmonizes with the life-history of the disease, and which is of special value from a prophylactic standpoint, since it teaches us the importance of promptly suppressing chronic suppurative rhinitis, viewed as a cause, the ultimate effect of which, atrophic rhinitis, is itself difficult of suppression.

Hereditary predisposition to atrophic rhinitis, is often pro-

nounced. For instance, a patient, at twenty-two, has developed the disease during the last two years; her mother, for some years deceased, suffered from the disease in a typical form; the patient's child, aged three years, is likewise affected.

Symptomatology.—Crust formation and fetor are the most prominent symptoms of the disease, although other secondary manifestations are numerous. The crusts may accumulate only in thin scales, or in large masses of horny consistency, which may even occlude the nostrils at times, being firmly adherent and impacted in the sinuosities of the nares, until by decomposition and softening of the layer adjoining the mucosa, they are finally cast loose and expelled in large pieces by blowing, often leaving abraded surfaces behind.

The fetor varies in intensity in different cases, but is rarely entirely absent, and in its severe form is so horribly nauseating and penetrating as to contaminate the atmosphere of an entire room in a few minutes, and to necessitate comparative isolation of the patient. The feted odor is apparently due solely to decomposition of the incrusting secretion *in situ*, but there is reason to believe that this decomposition may extend to the secretion which is still in process of elaboration in the substance of the glands themselves.

In advanced cases, commonly, the sense of hearing is impaired, the patient's own sense of smell obtunded, the external nose broadened, its alæ thickened, and the physiognomy lacking in acuteness of expression. The disease extends after a time to adjoining surfaces, constituting atrophic naso-pharyngitis and atrophic pharyngitis. The naso-pharynx becomes so incrusted that the fetid masses must be literally pried out with probes and forceps. More rarely, even the larynx and trachea become involved, crusts accumulating in these passages to the point of occasioning dyspnœa.

Diagnosis.—On rhinoscopic examination, both anteriorly and posteriorly, one is impressed by the spaciousness of the nasal cavities, and the presence of scales or crusts.

The disease is likely to be confounded, especially in childhood, with hereditary syphilis of the nares, which is also accompanied by fetor and incrustation. Unfortunately, by reason of the fetor, the term "Ozœna" has been applied to both diseases, consequently it is a bad name for either affection, especially since it refers only to the symptom—fetor.

In atrophic rhinitis, there is uniform atrophy and incrustation without deep, destructive ulceration.

In hereditary nasal syphilis, the atrophic process, if present at all, is not uniformly distributed, the nostrils being contorted by deep ulceration, with subsequent cicatrization of various parts.

Prognosis.—Atrophic rhinitis requires persistent, thorough treatment over a period of from four months to two years, in order to effect recovery even in young subjects and in recent cases. Both patient and physician are prone to become discouraged, and to abandon treatment, much to the disadvantage of the former.

Inveterate cases must continue cleansing measures for years, as part of the toilette, with the same regularity that is given attention to the teeth. In the worst cases the difference between persistent treatment and total inattention, is the difference between the lot of an acceptable member of society and that of a social outcast.

Treatment.—The first essential to successful treatment is absolute and continuous cleanliness of the parts. The crusts must not be allowed to form, much less to undergo decomposition. One of the most efficient means to this end, especially for children, is the nasal douche. I believe it to be justifiable for the sake of efficient treatment of this particular disease, to assume the slight risk of inflammation of the ear, possible by this instrument. This risk, with proper use of the instrument, is remote in comparison with the danger from atrophic rhinitis, inefficiently cleansed. The original instrument of Thudicum, was of glass, but the ordinary soft rubber

bag gravity-douche fitted with a nasal nozzle, answers the purpose still better.

It should be suspended from a nail over a convenient basin, at such a moderate height that the bottom of the bag is only about three inches above the level of the nose, as the head is held over the basin. The patient must maintain breathing by the mouth well opened, when, on applying the nozzle to one nostril, the liquid will gravitate gently and slowly into one nasal passage and out through the other, the oral respiration sufficing to close the naso-pharynx by the velum palati. Not force, but thorough maceration, is requisite to detach the crusts; therefore one to two pints of fluid should be gently and slowly used, twice daily, as a part of the morning and evening toilette. The liquid employed should be alkaline, to facilitate solution of the crusts, *antiseptic*, to counteract the fetor, and *stimulating*, to encourage regeneration of the atrophied glands. These qualities are provided in the following formula:

℞ Sodii bicarbonatis, 3 dr.; Sodii boratis, 3 dr.; Extracti pini canadensis fluidi, 1 oz.; Glycerini, 4 oz.; Aquæ q.s. ad. 8 oz.

M. et Sig. To be diluted according to tolerance, adding one ounce to the pint or quart of warm water for use with the nasal douche.

With older children who can be taught the necessary manipulation, Warner's post-nasal douche, should be substituted for the anterior douche of Thudicum on account of greater safety relative to the ear. The same solution in the same proportion, can be used with it. One must first draw up a part of the liquid through the instrument into the rubber ball, then insert the curved nozzle through the mouth, behind the velum palati, into the naso-pharynx, and squeeze the ball, thus expelling its contents forward through the nasal passages. This procedure should be repeated until half a pint of liquid is thus used, morning and evening. Children who will

not tolerate any of these means can have the nostrils syringed, conveniently, by an ordinary soft-rubber tipped ear syringe.

Peroxide of hydrogen has the property, by rapid oxidation, of disintegrating mucu-purulent matter, and sprayed into the nostrils, it will thus assist materially in loosening the desiccated secretion. It should be used a few minutes preceding the employment of either form of douche, sprayed by a powerful double-bulb hand atomizer, and of a strength just insufficient to cause smarting. The patient should receive treatment preferably from one to three times weekly in the office, at which time any resisting crusts should be detached by a cotton probang, and more actively stimulating and antiseptic medicaments applied. For the excoriation and incrustation around the anterior nares and over the cartilaginous septum, which is often one of the most annoying features with children, the following ointment thoroughly used each night, being inserted into the nostrils as far as the finger will reach, gives the most satisfactory results:

℞ Hydrargyri oxidi flavi, 1 gr., Vaselin, 1 oz.

M. et Sig. For local application.

Sprays of "liquid vaselin" with which antiseptic and stimulating medicaments, such as thymol and menthol, may be incorporated, are also serviceable at times, tending to retard crust formation. Cod liver oil and syrup of iodide of iron are seemingly the most useful internal remedies, although neither can be relied upon to the exclusion of local treatment.

DISCUSSION.

Dr. Henry Gradle, Chicago:

In the practice to which I have confined myself I see these nasal troubles, not so much for their own sake as because of the complications they cause, and from this point of view I fully agree with the author as to the importance of nasal troubles, and the frequency with which they are overlooked and neglected. By far the greater part of all suffering of the ears in children is due to nasal or naso-pharyngeal disorders, and likewise some of the most fre-

quent eye troubles are also the remote results of nasal trouble. In neither class of cases can we afford to ignore the nose, although we may be able to benefit the patient temporarily even without treating the nasal trouble.

As regards the classification of these disorders, the author has brought the subject out so fully that I do not see that anything more can be added to it.

As to the treatment, he has also covered this ground so well that but little can be further said on the subject. I would rely, however, more on direct applications than on any internal treatment. I have never seen any benfit from internal treatment in nasal affections, either chronic or acute, and I am convinced that the internal use of remedies is of small advantage. The author laid some stress on the use of the douche in the atrophic form of the disorder. I would fully corroborate this, but would add that in the form known as hypertrophic rhinitis the advantage derived from the use of the douche is very slight. It is in the forms with nasal obstruction that the douche may be of considerable danger to the ear, and it is in these forms where it is of the least use, if any at all, in the hands of the patient, although the physician may employ it for some special purpose. Thus, where the secretions are copious, the use of the douche is almost a necessity before we can apply local remedies, simply because they will not penetrate the tenacious muco-pus covering the surface.

As regards the applications, I have had the most experience with nitrate or silver, and, from my experience, would strongly endorse it, either in the form of a spray of the six per cent. solution, or in the form of a powder. The spray is more efficacious than the powder, but the drawback is that it is difficult to avoid staining the hands and clothing, so that, especially in the case of children, dry powders are more convenient, and are perhaps as beneficial as the spray. I use, as a routine measure, the trituration of the nitrate of silver, with six or eight times its weight of talc, and the dosage of this can be regulated by employing more or less pressure on the bulb of the applicator.

As regards the various forms of either purulent or hypertrophic rhinitis, which are not complicated by growths, either in the nasopharynx or by thickening of the septum sufficiently to encroach on the nasal caliber, the use of the douche, with a nitrate of silver or menthol albolene spray, has in my hands proved sufficient, but when we have stenosis, be it in the form of thickening of the septum, or primarily enlarged turbinated bodies, or especially in pharyngeal complications with vegetations, medicinal treatment is insufficient and surgical measures are required.

A UNIQUE CASE OF TYPHOID, WITH SEVERAL RELAPSES.

BY MARY H. THOMPSON, M.D., CHICAGO.

This case of typhoid was to me exceptional, because of its four periods of fever within eight weeks, and its many complications, some co-existing at the same time, and others arising at several different times.

The case was attended at its beginning (during my absence from the city), by Dr. Annette Richards, who invited me to take charge of it when I returned, as it was in a family where I had had the medical care for several years.

July 30. Dr. Richards was called to Mrs. P., who was forty-nine years of age, and had been a very healthy woman up to about five months previous to her present illness, when she had the then prevailing epidemic, influenza, and a diarrhœa which threatened to become chronic, and from the effects of which she had hardly recovered, although she had called herself well during the previous summer.

Dr. Richards found her with a general malaise and an intense headache, backache, pain in the left side and abdomen. The doctor learned that she had been ill a week, with all the present symptoms. The patient, at this time, had an afternoon temperature of 103 deg. F., and was at the same time so chilly as to require artificial heat applied to the extremities during the height of the temperature. The morning's highest temperature was a degree less than that of the afternoon. She had nausea; the renal secretion was dark and thick, though of normal quantity.

The fever followed about the usual typhoid type, until it had run about two weeks from its commencement. The

highest afternoon temperature of this period was 103.5 deg. F. There were no other peculiar symptoms, during this period, than that the height of chill was not fully developed, until the thermometer and patient's face indicated that the highest thermal point had been reached for the day.

August 10. The patient was considered convalescent, temperature and pulse remaining normal two days, then suddenly rising with the on-coming chills.

On the 12th the temperature rose to 103 deg. F.; the next day it was slightly less, and on the 14th it was normal. Again on the 17th it came up suddenly to 104 deg. F., with chills, nausea, and the other symptoms mentioned, and on the 19th it was again normal, and remained so until the 26th. On the 20th a large amount of sloughs passed with the stool twice, and on the 22d they passed with "greenish yellow matter," as reported on the nurse's record; also on the 24th, 26th and 28th.

On the 26th the fever arose to 103.2 deg. F., and continued rising daily until it reached 105.5 deg. F., and stood nearly as high the succeeding eight days, marking the time for defervescence by dropping to 103 deg. F. for an hour only, morning and evening, the pulse ranging from 90 to 120 in its beats.

On September 4 I was requested to take charge of the case, which I did after consultation with Dr. Richards and Dr. John Bartlett.

I found her with a pulse of 104 to 120, and dicrotic; the temperature was from 103 to 105 deg. F. There was peritonitis, great tenderness and some meteorism of abdomen: tremor, and nausea from catarrh of the head, pharyngitis and laryngitis; there was bronchitis, pain in the renal region, congestion of the pelvis, and excoriation of the urethra occurred, from which she suffered much.

The renal secretion, though dark, was of normal quantity and above; but this was scarcely noticed until after convalescence, when the record was again referred to. The bladder

was washed with warm water and the urethra treated. The spleen was so tender that she could scarcely bear the light pressure of bed-clothes, and when turned slightly upon the left side, she was glad to be immediately turned back, to relieve the pain in that side.

September 7. Meteorism was so great, and gas accumulating so rapidly, that I ordered a syringe rectal tube inserted a short time, twice in the day, by which to remove the gas, as after laparotomy ; the intestines were becoming so paralyzed that I looked for perforation, and thought it better to allow increased peristalsis, from the insertion of the tube, than that perforation should occur from such great distension. The mucus from the head and throat provoked vomiting, and milk, though containing one-fourth of its bulk of lime water, was instantly expelled in hard coagulæ. Constipation continued throughout the fever and was counteracted by enemas.

September 8. The pulse was distinctly dicrotic ; the tremor so great that the patient seemed about to lose form and fall apart, jelly-like. After my visit of the morning I was recalled at noon, as the patient was having "hemorrhage of the bowels," as the messenger reported. I found that a "pint of bright red blood had passed," as the nurse stated. Turpentine stupes, that the patient had worn under the poultices, were then changed for large compresses, steeped in vinegar and placed over the whole abdomen, and the vinegar of opium was the only medicine given by mouth, as the stomach was so irritable, and this in minute quantities.

On the next day there were four stools of clear dark blood and clots only ; on the third day there was one large stool of the same dark blood, without clot. About eight days after the hemorrhage began she had a rise of temperature from a sub-normal one to 101 deg. F., followed by an unusually offensive stool, containing much dark greenish blood, after which the temperature fell to normal again. Evidently this was all one hemorrhage, as indicated by the different degrees

of decomposed blood, and was estimated to be not less than four pounds.

Subsequent to the first hemorrhage came the most profuse perspiration that I ever witnessed. In twelve hours after it began, the patient had the appearance of having been parboiled, and was dried and changed, as after a bath, several times in twenty-four hours. She also complained that she could hardly see. The failure of the eyesight continued for several days. The temperature became subnormal (the nurse said 94 deg. F.) I took it when it scarcely reached 95. The pulse was very weak, and but sixty beats per minute. The patient was really cold to the touch, as if all bodily heat had left her.

Numerous bottles of hot water were placed around her, and placed in her hands, thus adding warmth to keep up the circulation. It was difficult to keep up the heart's action, because of the rapidity with which the blood lost its serum, which, with the hemorrhage and perspiration combined, must have equaled that in Asiatic cholera.

After the discharge of the last decomposed blood, slow but sure convalescence began. After I had ceased my daily visits, while calling one day, the patient complained that she had no rest, day or night, because of frequent micturition, and that the renal secretion was so great. The next day I saw it measured for the twenty-four hours, and it was six quarts; it was dark and heavy with urates, but contained no albumen or sugar. I then referred to the nurse's record again, and saw that, from the commencement of the fever, the quantity had been variable, from twenty-five to forty-two ounces per day; the larger quantities later in the fever, and increasing in amount with convalescence. With a warmer atmosphere, and a dress of flannel, and a liberal use of the tincture ferri chloridi, well diluted, that it might not irritate the diseased mucous membranes, this diuresis was much lessened; after which she became affected with articular rheumatism "in all of the joints of the body."

The last disease nearly disappeared in a month or so, and she now, seven months since her fever, is looking more natural, and has gained flesh, though the renal secretion is yet more than normal, and she is occasionally slightly lame from the rheumatism.

I am forced to conclude that the rheumatism was the result of checking the elimination of the urates; but I cannot come to a conclusion in regard to the cause of the diuresis with so much uric acid during a typhoid fever.

In reviewing the case, I ask myself, as wiser physicians have done from time immemorial, What is fever? What its cause, and what its result on blood and tissue? There was increased tissue change here, from bone to brain. There were four periods of fever: *one* of *two weeks*, followed by an interval of two days. The *second* and *third* were of two days each, with an interval between of two days, succeeded by an interval of eight days, and a fourth period of thirteen days, which was nearly one continuous paroxysm, her temperature falling to 103 deg. F., but for about an hour at a time, twice daily.

The second and third short periods were of sudden rise of temperature and slow defervescence. The last, the fourth, beginning on the 26th, six days after the sloughs appeared, I attributed to the sloughing process; but then the question arose as to *why* it did not occur before?

Just previous to the hemorrhage, there was shallow breathing, great tremor, a dicrotic pulse, and such increasing peritonitis that I expected perforation. While thinking how it could be met (for I had never had it occur in my practice, and this was the first time I had anticipated it) I then realized how useless it would be to make a long enough abdominal incision to handle the probable length of intestine affected, to find one diminutive perforation hidden away in near proximity to the mesentery in a most difficult locality to discover.

The manipulation of the diseased bowel, possibly, from the cœcum to the pyloric orifice of the stomach, *might* cause more perforations and the operator leave those thus made,

from which the patient would succumb after the closure of the wound ; for I have made examinations when there were several patches ulcerated *to the* peritoneal coverings.

After such a long burning fever, *can* we expect the blood to be *plastic* enough to allow new wounds to unite ? In this case the hemorrhage was succeeded by the defervescence with the very profuse perspiration.

The fever was presumably the effect of drinking unsterilized lake water ; and there were *two* causes for its severity. One, the effect of the previous illness, and the other that her room had no direct rays of sunlight in it, as it was a north room, between two extensions, which subjected it to much shade, and in this room she had slept since the May previous.

The influence of sunlight cannot be too highly prized during the treatment and convalescence of typhoid patients. It is reported that Buchner has come to the conclusion, after well-tried experiments, that the effect of the direct rays of sunlight upon bacteria, suspended in water, is to deprive them of vitality ; among the variety experimented upon by him was the typhoid bacillus. He suggests that it is this power of the self-purification of running streams that purifies, instead of the *action* of the water.

If it be proved that Buchner's conclusions are correct, we can expose our patients to the sun's rays and get the same effect, modifying the disease, as there seems to be no remedy by which this so-called "self-limited disease" can in any way be cut short before it, in many instances, destroys the patient's life.

If bacteria are destroyed while in water, why may they not be in the capillaries of the surface of the human body, which, though less transparent than a stream of water, is exposed in many square feet of surface in the cuticle, and carries so *much* blood, the cuticle being the largest organ in the body ?

For many years the hygienic treatment of typhoid fever has been to place the patients in well-ventilated rooms, and I

would say, in well *sunned rooms.* If, during convalescence, a patient is able to be out of his or her room a portion of the day, open it to the sun's direct rays, however hot, during the absence, and always when the patient returns, if practicable.

Do all the present theories of typhoid fever coincide with what we know to be facts? Instance, the pulse is quickened by the influence of the fever, in some way, until the beats are doubled in their number for a given time. Does the theory that the blood is filled with the typhoid bacilli, harmonize with the fact that a foreign body, when introduced into the blood, even while circulating in the blood-vessels, affects the formation of fibrin at the locality in which the circulation has been interrupted? Instead of *obstructing* circulation, do not these bacilli quicken it? If these microscopical bodies have life, and are capable of movement, and are even so small as to pass the lumen of the minutest capillaries, or the walls of the same vessels, one effect should be to thicken this fluid, hence retard the circulation instead of hastening it.

What other influences are at work in this physiological process? The muscular force is weakening, so also the nervous. How are such bacteria eliminated from the system? When we say this fever was the effect of drinking unsterilized lake water, is it saying that the typhoid bacilli are in the water? Some authors assert that sewage alone will not cause this fever. If typhoid bacilli are now in the lake water, are we, in Chicago, to have a perpetual typhoid, or can we turn to Buchner's conclusion, and feel assured that the vitality of those bacteria, now in the water, will eventually be destroyed, and with no new increase, when sewage containing them is turned away?

I have referred but little to treatment, other than exposing the patient to the sunlight, as there is so little to do but direct the care in nursing, which includes feeding, and keeping a patient quiet, both mentally and physically. Yet with every new case I find myself prescribing some one more of the following remedies: The solution of chlorate of potash, carbolic acid,

aromatic sulphuric acid, quinia sulphate, and I have used, in several cases, after the first of the second week, light poultices of simple flaxseed meal over the abdomen, hoping to modify the swelling of Peyer's glands and preserve them from ulcerating.

I have given the chlorate of potash in the beginning of the disease, and carbolic acid later.

DISCUSSION.

DR. J. H. HOLLISTER, Chicago:

I would like to inquire Dr. Thompson's views with reference to the best method of reducing temperature.

DR. MARY H. THOMPSON, Chicago:

I do not see what we can do to reduce temperature other than sponging to relieve the effects of the fever. If we fail to kill the bacilli, the temperature immediately goes up again.

DR. EPHRAIM INGALS, Chicago:

I do not know how Dr. Thompson can say so confidently that her patient contracted typhoid fever by drinking lake water. We are not apt to know how diseases, not clearly contagious, are contracted. In the treatment of typhoid fever physicians who are the most prudent in their medication have the best results. This applies to the use of antipyretics as well as to other medicaments. It is easy by their use to reduce the temperature; but we may weaken the vital powers at the same time. The bed of the sick is often too warm. If the weather is warm, they should lie under the lightest covering. This allows unimpeded radiation of the heat of the body, which is nature's own way of reducing the temperature. With all Dr. Thompson has said of the salutary effects of air, rest, sunlight and care I fully coincide. A number of cases under my treatment, to whom I have administered salol in moderate doses, have progressed very satisfactorily; but how much of this was due to the natural course of the disease, and how much to the salol, I do not know. It, however, did no obvious harm—which is something in its favor. We take up new remedies too precipitately and prescribe them for their alleged powers without knowing very exactly what their effects will be. It takes a great deal of observation to learn the power, the action, and proper mode of administration, of any remedy. Franklin gave us this excellent advice:

"Be not the first by whom the new is tried,
Nor be the last to lay the old aside."

Too much aliment is administered to typhoid patients. It is not what is taken into the stomach, but what is digested and assimilated, that gives strength. The digestive organs are enfeebled, along with the rest of the body, and the full labors of health should not be required of them. If the food is not digested, it has to be cast off, and is an element of weakness. The diet should be something the patient does not loathe. For patients with whom it agrees there is nothing better than milk, that is so much used.

Dr. William E. Clarke, Chicago:

I believe firmly that elevation of temperature in typhoid fever, after every other apparent indication of cessation of the disease, is due, in nine cases out of ten, to the lodgment of fecal matter in the lower bowel. I know that I have had cases of typhoid fever that were fairly convalescent, to all appearances, but for a daily elevation of temperature above the normal, and I know that without the fear of hemorrhage, or any of those things before me, I have used irrigation of the lower bowel with the happiest effect, and I had my suspicion, when hearing this case of Dr. Thomson's, that septicæmia might have had a good deal to do with the elevation of temperature. I know we hesitate to interfere in these cases for fear of ulcers — they are a good deal of a bugbear — but I am in favor of always, in the latter part of the disease, using mild laxatives, emulsions of castor oil with turpentine, for the purpose of clearing out the intestines, because frequently material remains in the intestines while the bowels move every day, and the nurse says the bowel is emptied, but this material remains in the intestines to produce septicæmia.

Dr. James B. Herrick, Chicago:

It seems to me this wholesale, not to say indiscriminate, condemnation of the newer antipyretics ought to meet with at least some objection. I recognize the fact that these remedies may be harmful, and I will confess to having thrown patients into collapse by the use of phenacetin and acetanilid. I always try to have the temperature reduced by sponging, or by other use of water, in typhoid fever. Yet we meet with cases in which the sponge bath will not, in the first ten or fourteen days of the fever, cause the temperature to descend; in fact, during the sponge you may find a temperature of 103 or 104 rise to 104½ or 105 deg. In such cases I never hesitate to use a drug, but try to use it with discretion. With the newer preparations of the coal tar series I think there is often a mistake made by administering too large a dose.

From three grains of phenacetin I think we can derive a marked antipyretic effect, and I am sure two and a half grains of acetanilid are sufficient. If these drugs are used carefully, and the patient watched, the dose needed to reduce temperature can be found, and symptomatically, at least, the patient is improved; after giving these remedies, not only does the delirium disappear, as the temperature drops, but the quality of the pulse improves, the hot skin becomes cool and moist, and the patient often sinks into a refreshing slumber. It will be found, I think, that these remedies are sometimes used with faulty judgment, especially at the end of the second week and beginning of the third. At this time the high temperature can be very readily reduced. A sponge bath, which at the beginning of the disease would not cause a drop in temperature, will now produce prompt defervescence; a temperature of 105 deg., that failed to respond to four grains of phenacetin early in the disease, will now respond to two grains. In an admirable paper, read before the Chicago Medical Society some time ago, Professor Quine took the ground that antipyretic drugs of the coal tar series were not always contra-indicated, and I feel sure, with the experience I have had—and in hospital practice I have seen nearly one thousand cases in the last five years—that the careful and discreet use of antipyretics is not only not always contra-indicated, but is frequently of positive benefit.

The condition of the bowels, to which Dr. Clarke refers, can be obviated if we take the precaution always, during the course of the disease, to have an enema given every other day, if necessary; in hospital practice that is the standing order. I have seen patients, where the condition of the bowels had been overlooked, suffer exactly as Dr. Clarke has stated, and have found the rectum so packed with scybalous fæces that no enemata or cathartic would suffice to dislodge them, so that it was absolutely necessary to take the finger to disengage these hard, packed masses.

With regard to nourishment, as Dr. Ingals says, some of these patients are overfed. Prof. Osler lays stress upon the point that too much food should not be given, the passage, at stool, of undigested food being an evidence of overfeeding.

Dr. Ephraim Ingals:

Can you tell us approximately the number of deaths from typhoid fever in the hospital?

Dr. James B. Herrick:

The percentage of deaths in the County Hospital, as in all public hospitals, is high; largely for the reason that patients come to us who have been neglected in the early stage of the disease. The percentage varies in different years. In 1890, for instance, it was

twelve per cent. out of a total of nearly six hundred cases. An average would be from ten to twenty per cent.; it is certainly much higher than in private practice.

Dr. Robert H. Babcock, Chicago:

I think Dr. Herrick's remarks, with reference to the coal tar derivatives, are timely, and I can endorse much of what he has said; yet in continued fevers I am a strong advocate of the use of cold; spongings are not always sufficient to reduce temperature, and in this country there is a strong objection to the use of the cold bath; therefore it seems to me well to try the plan which has been so successfully used in London Hospital, as reported by Van Wick — that is, the use of what he calls the ice cradle. Spongings and the cold bath apply cold periodically, but the ice cradle applies cold permanently. It is simply a framework arranged over the bed of the patient, from which pails of ice are suspended, and over this apparatus is thrown a sheet. The circulation of air is allowed by the thin sheet, the patient's body is stripped and lies naked in the tent, the atmosphere of which is only two degrees colder than the outside atmosphere. This, at first glance, would seem insufficient to reduce the temperature, but it has been found, by repeated and numerous trials, in cases of typhoid fever, as well as pneumonia and other diseases, that it will effectually reduce the temperature several degrees, and more efficiently even than the ordinary spongings. There are one or two other points in the management of typhoid fever which, it seems to me, if regarded, can do much in the way of reducing temperature. William Porter, of New York City, has called attention to the effect, in maintained pyrexia in typhoid fever, of intestinal fermentation, that undoubtedly this plays an important role, and he suggests the use of certain remedies to allay this intestinal fermentation, and preferably the use of dried oxgall, carefully purified, so as to be free from irritating ingredients. Beaumont has especially recommended the use of salol, and for exactly the same purpose of allaying intestinal fermentation; but this new remedy of sulfanol is the same as salol except that it contains the salycilic of carbolic acid in equal proportion and is less toxic; it can be used in larger doses, thirty or forty grain doses in twenty-four hours, according to Hirt, without the slightest bad effects. Then the use of diluted hydrychloric acid acts well in the intestinal tract, in addition to aiding digestion. Another point in the reduction of temperature is the maintenance of free excretion through the kidneys. This point is often neglected. The plan followed in France and Germany, of having a pitcher of slightly acidulated water by the bedside of the patient, who, if strong enough, can help himself freely, or the nurse can

give it freely, is most excellent. In Germany it is barely acidulated with red wine, and the patient is allowed to drink as much as he wants. The use of colonic flushes is also very efficient in maintaining free dieresis, not only by freeing the lower bowel from irritating products, but more or less absorption takes place and the water is eliminated freely through the kidneys. This plan has been especially recommended by French observers. It seems to me the routine practice of administering an enema is an excellent one, only I would add to the suggestion of Dr. Herrick that it be given daily. In my service at Cook County Hospital I have endeavored, as far as possible, to have quite copious enemata administered daily, with care, however, lest too great distension of the bowel takes place. I have managed my cases there, so far as possible, on this very simple plan, modifying the administration of milk somewhat by always having it diluted. I found the nurses were in the habit of administering milk in nearly the full strength as it came from the dairy. I always use it diluted, and preferably with carbonate water. If the circumstances of the patient, or the conditions, are such that natural carbonate water cannot be obtained, it is an excellent plan to simply dilute the milk with hot water and add six grains of bicarbonate of soda and six grains of ordinary table salt, which makes a very good artificial carbonate water. It seems to me the reduction of temperature in typhoid is of the utmost importance. It is certainly a self-limited disease, and if we can sustain the powers of life, our patients will ordinarily get well.

Dr. James Tweddle, Washburne:

I would ask if the patient was ordinarily hysterical? I would also refer to the use of water in these cases. In my recent reading I have found accounts of experiments with the use of water in such cases; cold water increased the temperature at once, while warm water decreased it.

Dr. Mary Thompson, Chicago:

Most of these remedies were used early in the case. There was another physician in attendance from the beginning. I gave the pure carbolic acid and dropped in a teaspoonful of milk, which seemed to be agreeable to the patient for a time.

In regard to sponging, I have always used warm water, and have never used cold water; I have had the opportunity of witnessing the effect of cold sponging, and I prefer the warm water. As antipyrene, and several other medicines to reduce temperature, had been used in the early stage, and as I took the case in the last period, I did not use them at all. It is my experience that warm sponging, with soap and water, will allay the inflammation and

reduce the temperature quite as quickly as cold water, unless the cold is applied continuously, and feeling that typhoid or pneumonia is very difficult to treat, I have always been afraid of using cold water.

As to the unsterilized water which was drank by this patient, being presumably the cause of the fever, it is the only cause we could find; she had drank large quantities of unsterilized water, and we could find no other cause.

ACUTE ULCERATIVE ENDOCARDITIS: A BRIEF RÉSUMÉ OF THE PATHOLOGY OF EIGHT CASES.

BY LUDWIG HEKTOEN, M.D., CHICAGO.

The following eight cases of malignant or acute ulcerative endocarditis, the heart lesion of each of which I have the honor to present to this society, occurred in the Cook County Hospital during the fifteen months ending April 1, 1893.

I wish to extend my thanks to all the members of the staff through whose hands these cases have passed from time to time for their gracious permission to utilize the material in this way; individual mention of names would embarrass the necessary concentration aimed at in this report.

These cases illustrate well the various forms of acute ulcerative endocarditis from an etiological, clinical, as well as anatomical standpoint, and they particularly emphasize the difficulties so frequently encountered in the diagnosis of this affection.

The cases are arranged in the following groups :

I. One instance of primary endocarditis of a normal valve.

II. Two instances of acute ulceration developing upon sclerotic valves without any known infection atrium.

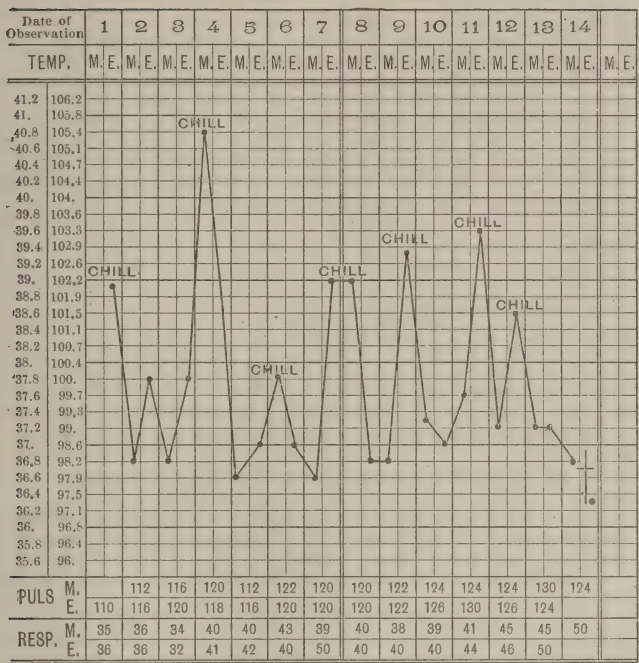
III. Two instances of ulcerative endocarditis with external lesions; in one infection of healthy valves, in the second infection of a sclerotic valve.

IV. Three instances of malignant endocarditis arising during the course of infectious processes elsewhere in the body.

GROUP I.

1. *Primary Malignant Endocarditis of Tricuspid Valve; Pulmonary Infarct; Chills and Intermittent Fever.*—Man, aged twenty-eight, molder; entered the county hospital, April 29, 1892. His family and personal history was negative; he had always enjoyed good health; he was taken ill six weeks before admission with pain in the back, chills and vomiting, since that time there had been almost daily chills followed by sweats. On entrance, he was found to be jaundiced, his skin showing numerous scratches. His pulse was 100, respiration 35, temperature 102. Over the lower lobe of the left lung there was dullness, bronchial breathing, crepitant rales; the lungs were otherwise negative on examination. There was nothing unusual noticed about the heart. The liver and spleen were apparently normal. May 2.—Crepitant rales over left lung in mammary and inframammary regions, while in the axillary regions there were moist rales, broncho-vesicular respiration, and some loss of resonance. May 6.—Patient is dull and stupid; there are a few moist rales over left lower lobe. May 11.—Is getting weaker; has lost weight; the skin is dark and muddy, the sclera yellow; the spleen is palpable. The heart sounds appear normal, there is no increase in the area of dullness. The upper border of the liver reaches the sixth sterno-costal junction and a little below costal arch. The bones and joints are normal. There is pain over the liver. There is constipation. The annexed chart shows the pulse, respiration and temperature as well as the chills that occurred during his sojourn in the hospital. May 13.—Exploratory laparotomy, the probable diagnosis being abscess of the liver. No abscess was found. Death.

The post-mortem examination (by Dr. Durr, to whom I am greatly indebted for the specimen) showed the following: the pericardium showed no changes; the heart (Fig. 1) weighed 285 grams; the semilunar valves were competent to the water test. The tricuspid valves show large irregular masses of fibrin upon the auricular surface; these masses vary in thick-



To accompany the case of tricuspid endocarditis.

ness, in size and in outline; they are rough and granular; upon the cusp nearest the pulmonary orifice is a large mass, about one cm. in height, projecting into auricle; in the center of the summit of this mass is an irregular opening leading into a cavity formed by the aneurismal bulging or sacculation of the valve out into the auricle. Near this aneurism is a smaller one, two mm. in diameter, without any thrombotic deposits about the margins; many minute perforations and quite marked areas of ulceration can be made out in the endocardium under the thrombotic masses already described. In both pleural cavities were extensive fibrous adhesions. In the lower part of the left upper lobe was a solid, red, wedge-shaped area over which there was a fibrinous pleuritis. The other organs showed no gross changes.

GROUP II.

1. *Fibrous Endocarditis of Aortic and Mitral Valves; Acute Ulceration of Aortic Segments.*—Colored man, teamster, forty-eight years old, had syphilis at twenty-eight; passed through an attack of rheumatism in the fall of 1891, but nothing could be learned as to the character and duration of this illness; was admitted into the Cook County Hospital (homeopathic service), February 17, 1892, after a sickness of four weeks with swelling of the lower extremities and the abdomen, scanty urine, anorexia, constipation and insomnia. The examination showed a mitral regurgitant murmur, much ascites, much œdema, and considerable dyspnœa. He died February 27th, 1892, without having had any fever or other symptoms of acute infection while in the hospital.

The post-mortem examination showed œdema, ascites, hydrothorax, compression atelectasis of the right lung, cyanotic atrophy of the liver, chronic gastro-adenitis, passive congestion of the spleen, and the following changes in the heart; it weighs 502 grams and appears equally enlarged as to both ventricles; there are no external changes; the endocardium in the right half is negative; the aortic valves are incompetent to the water test; the mitral orifice admits two finger tips; the free margins of this valve are thickened, rounded, stiff, fibrous and the cordæ tendineæ are also stiff and thick, but there are no recent vegetations. The aortic valves are much changed (Fig. 2); the free margins are thickened and retracted, and projecting from the ventricular surfaces near the free edges, are long, filamentous, fibrinous masses; in the intercoronary segment is a perforation, about four mm. in diameter, with a crater-shaped mass of fibrin and calcareous granules around the ventricular margins; upon the center of the anterior mitral leaflet is a mass of granular thrombotic deposit corresponding to the point where the margins of the valve aneurism would touch the endocardium during systole. Finally, there is a small loss of substance in the endocardium below the attached margin of the perforated aortic cusp. The myocard-

ium showed no other changes except those of hypertrophy and dilatation already referred to. It was not possible to demonstrate any bacteria in the margins of the valvular aneurism.

2. *Chronic Changes in the Aortic Valves; Acute Ulcerative Aortic Endocarditis. Rupture of acute Aneurism of Membranous Part of Interventricular Septum.* Man, age thirty, was admitted with the history of having been sick for five weeks, but any accurate idea as to the nature of the disease could not be obtained. He was in a chill at the time of admission, and auscultation showed a rubbing, systolic murmur over the heart which could be followed into the great vessels; he had a high temperature, rapid pulse and respiration, and appeared moribund from exhaustion. Death, after twenty-four hours. The post-mortem examination showed the following changes in the heart: It was considerably increased in size, weighing 450 grams; the aortic valves were incompetent to the water test; the free margins of these valves were thick, stiff and retracted; upon their ventricular surfaces were large, fibrinous masses adherent to necrotic areas in the endocardium; the thrombotic deposits were most marked upon the intercoronary segments and in the mural endocardium; immediately below the attached margin of this valve was an opening surrounded by an irregular fibrinous mass; this opening led into an aneurismal sacculation of the membranous part of the interventricular septum or undefended space which projected into the right auricle between the valves; upon its summit was a perforation whose margins were covered with a huge fibrinous excrescence. In the spleen were three characteristic, medium sized, anæmic infarcts without any evidence of commencing suppurative softening. The other organs in the body were macroscopically normal with the exception of a few pleuritic fibrous adhesions and cloudy swelling in the kidneys and liver. Micrococci were found in the sections made from the aortic valves and the aneurism of the membranous part of the septum, but no cultivation experiments were made.

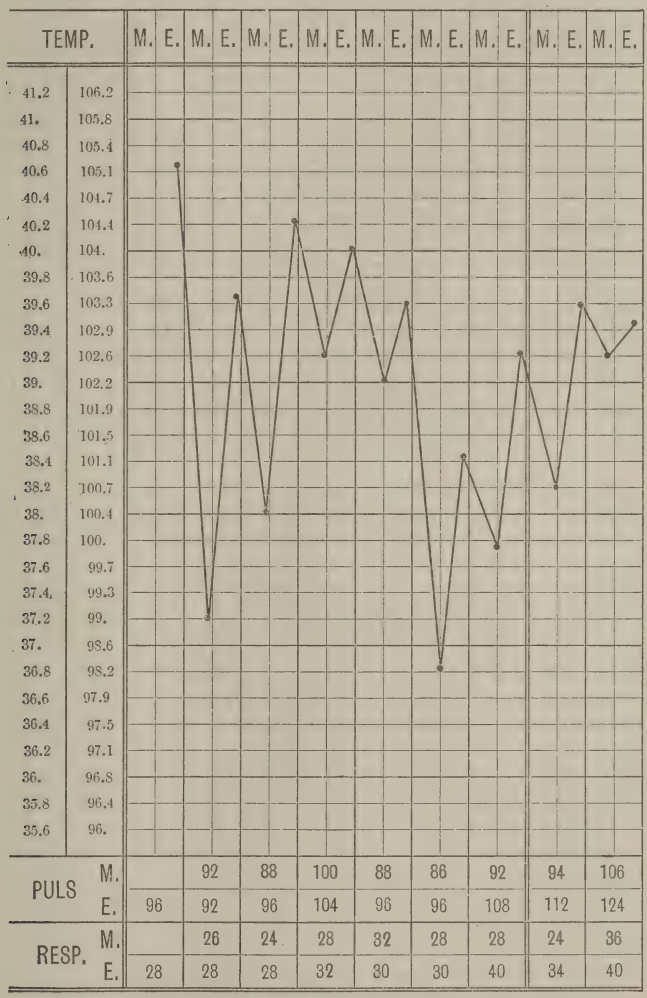
GROUP III.

1. *Fibrous Endocarditis of Aortic Valves; Superficial Burn of Right Arm; Acute Aortic Ulceration; Sero-fibrinous Pericarditis.*—Man, aged twenty-four, received a superficial burn of the right arm for which he was admitted to the hospital the next day, March 29, 1893. The arm was enclosed in a wet boric acid dressing, and three days later this was changed to a boric acid and bismuth dusting powder, the burn being nearly healed. On the same day the patient was seized with headaches; he had chills; the temperature went up to 105.2, and there appeared severe pain in the lower part of the left chest. The patient was transferred to the medical service of Dr. R. H. Babcock; here physical examination showed the man to be fairly well nourished; dullness on percussion over the upper portion of the left lung anteriorly; auscultation did not yield any satisfactory result according to the record; the urine had a specific gravity of 1,024, contained no albumen, and microscopic examination was negative. Death, Feb. 11, 1892.

The autopsy showed an anatomically typical acute serofibrinous pericarditis; a chronic aortic endocarditis with thickening and retraction of the free margins, valvular insufficiency, and some hypertrophy and dilatation of the left ventricle, the heart weighing 480 grams. Upon the left coronary cusp, was a large mass of fibrin and crumbling material covering the ventricular surface, and in the center of this area was a small perforation; the adjacent portion of the intercoronary leaflet showed a similar condition with a smaller perforation; in the myocardium just below the joint attachment of these two valves was a small necrotic area, and the intima lining the sinus valvular behind the left coronary cusp, presented a gray, soft, necrotic appearance. No bacteriological examation was made.

2. *Gangrene of Foot from Frost; Pulmonary Abscess; Acute Ulcerative Endocarditis; Septic Renal Infarct; Streptococci and Staphylococci in the Tissues.* Man, aged thirty-three, was admitted under Dr. J. B. Murphy's care on Feb. 12,

1893, for frozen left foot; the foot was grangrenous and foul, and on Feb. 15, the foot was amputated in front of ankle



To accompany the case of aortic endocarditis after burns of right arm.

joint, the line of demarcation being fairly well developed. The patient, at the time, appeared to be suffering from sap-

FIG. 1.

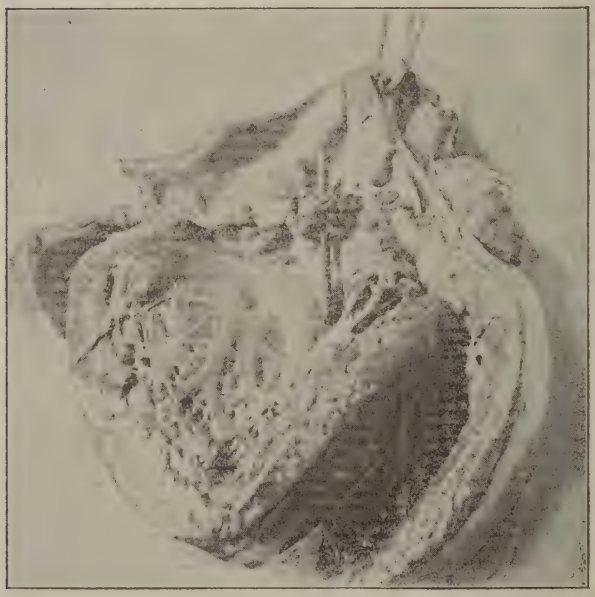


FIG. 2.

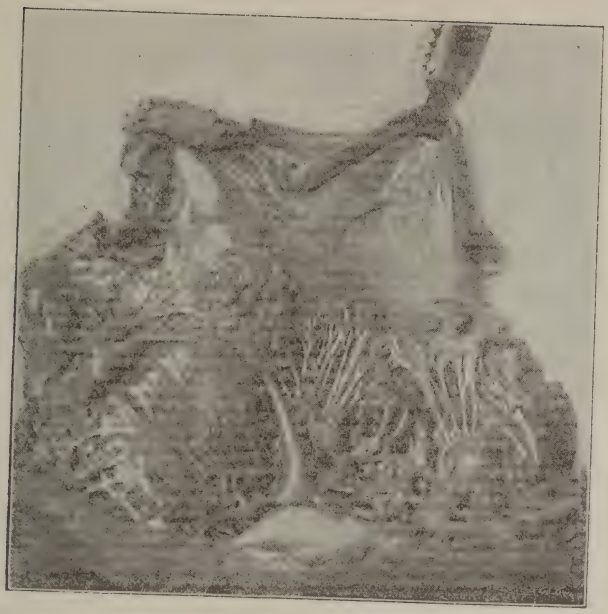


Fig. 3.

Fig. 4.

ræmic symptoms, and on the 16th there was noted dullness over the upper right lobe in front, and also considerable cough. At this time the temperature was 105, the pulse 108, respiration 38, and the record shows the temperature to have remained high with some morning intermissions until death occurred, Feb. 22, the pulse increasing in frequency. The stump did not during life appear otherwise than pursuing an aseptic healing. After death there was found the following:

The stump was free from suppuration, and there was no thrombo-phlebitis in its vicinity. In the right upper lobe was found a cavity as large as a hen's egg, filled with thin, yellow, purulent fluid, without any distinct communication with the bronchi, the wall being quite thick, containing soft, yellow foci. In the heart, which was otherwise quite normal, the aortic valves showed large thrombotic masses upon the ventricular surfaces, quite firmly attached to necrotic areas in the endocardium. The right kidney contained a wedge-shaped infarct, which was in process of purulent disintegration. There was an acute splenic tumor.

Cover glass preparations from the lung abscess, the aortic valves, and the softened infarct, showed cocci in large numbers, and especially, streptococci; inoculation of gelatine and agar tubes produced cultures of staphylococcus aureus and streptococcus. Sections from the valves and from the wall of the pulmonary infarct, stained according to Gram or with Löffler's methylene blue, showed cocci in large numbers, frequently arranged in rows; the sections of the valve, stained by other methods as well, showed the characteristic changes of acute ulcerative endocarditis.

GROUP IV.

1. *Acute Malignant Endocarditis of Mitral Valves Secondary to Lobar Pneumonia.*—A man, forty-five years old, was admitted moribund from a fibrinous pneumonia of the lower lobes of both lungs. The post-mortem examination showed the lower lobe of the right lung to be in the stage of gray, while

the lower left lobe was in that of red pneumonic hepatization; there was also a fibrous, retracting endocarditis of the free aortic valve margins with valvular insufficiency, hypertrophy and dilatation of the left ventricle. Upon the auricular surface of the mitral valves were massive deposits of fibrin upon a necrotic endocardium (Fig 3), and in one place there was a circular perforation of the valve, one cm. in diameter, which was covered with fibrin. There were no evidences of embolism in any of the organs. Unfortunately decomposition had so far advanced at the time of the autopsy that no bacteriological examination was attempted.

2. *Lobar Pneumonia; Right Empyæma; Operation; Acute Ulcerative Endocarditis of Aortic Valve Segment and Adjacent Endocardium.*—Man, porter, age thirty-eight, admitted February 28, 1893, with following history: He drinks beer and whisky every day; he had pleurisy three months ago and malaria several years back. The present illness commenced eight days ago with fever, cough, pain in upper part of chest, but now in lower right side; he cannot take a deep breath; has had no chill; the expectoration has been white and yellow. Examination shows a fairly well nourished man; conjunctivæ a little yellow; tongue clean, tremulous; respiration short and catchy; over lung are numerous moist rales, and over right lower lobe posteriorly are fine crackling rales. Pulse 108, temperature 102, respiration 32, on admission. On March 8, the temperature had gradually reached the normal figure, pulse was then 68, respiration 28. In two days there is noticed a slight evening temperature elevation; on March 16, the temperature at 8 A.M. was 100, at 8 P. M. 102.6 and it continued at about this range until the 23d, when the diagnosis of right empyæma was made and the patient was transferred to the surgical service of Dr. Murphy, where a portion of the sixth rib was removed just below the angle of the right scapula, the pleura incised with escape of pus, and drainage tube inserted. The patient's condition at the end of

the operation is noted as very poor, and on the 25th of March he died.

The autopsy showed two encapsulated pus masses in the upper posterior part of the cavity not reached by the drainage tube; some atelectasis of the right lung; complete fibrous obliteration of the left pleural cavity, and a small area of broncho-pneumonia in the lower left lobe; also adhesions between the liver and the diaphragm. In the heart the intercoronary aortic segment showed upon the ventricular aspect a crumbling, gray, friable mass, one cm. in height, two cm. in diameter with a crater-shaped opening into a valvular aneurismal cavity; the endocardium below the attached margin of the valve was necrotic and crumbling, and showed irregular openings leading into spaces in the wall of the ventricle, without any perforations into any of the neighboring cavities; upon the auricular surface of the anterior mitral segment was a small thrombotic deposit on a necrotic area in the endocardium which may be connected with the lesions described about the aortic valve; otherwise the heart was normal; it weighed 240 grams. In each kidney was a small anæmic infarct which in the left kidney had commenced to disintegrate. There was an acute splenic tumor, and the solid organs showed parenchymatous degeneration. The bacteriological examination showed in the necrotic, mural and valvular endocardium both streptococci and staphylococci and also a bacillus which appeared like the bacterium coli commune.

3. *Acute Leptomeningitis; Ulcerative Endocarditis of Aortic Valves.*—A man, thirty years old, was admitted unconscious with the history of becoming suddenly ill the previous day; his pulse was 120, temperature 102, respiration 20; the pupils reacted to light; the retinæ were normal; the stomach was empty; the heart and the lungs could not be satisfactorily examined on account of constant loud breathing. In a few hours the unconsciousness deepened into coma, there were involuntary discharges, and the nurse reported spasms. Death after twenty-four hours. The autopsy showed a double

fibrous pleuritis with pleurogenous interstitial changes in the lower right lobe; pulmonary œdema; fibrous perisplenitis and perihepatitis; cloudy swelling and chronic interstitial changes in the kidneys; chronic deforming endoaortitis, and the following changes in the brain and in the heart: There was much subdural turbid fluid, and the pia-arachnoid was œdematous, and in the meshes over the pons and the cerebellum was purulent fluid; all the ventricles contained purulent turbid fluid, with a yellow sediment in the dependent parts of these cavities. There were no macroscopic cerebral changes. The cavities in the vicinity of the brain were negative on opening and inspection. The heart (Fig. 4) weighed 320 grams. There are no changes to be noted except those upon the aortic valves, the intercoronary segment of which presents a circular perforation two cm. in diameter from the aortic aspect; around the ventricular margins is massed a crumbling wall of grayish, granular material, one cm. high, the opening in the summit being seven mm. across. The other aortic leaflets are negative on examination. There were no old changes in the valves. In the center of the ventricular aspect of the anterior mitral segment is an irregular loss of substance, two mm. in diameter, leading into a small cavity, filled with granular material between the endocardial surfaces of the valve. Cover glass preparations show streptococci in large numbers in the meningeal exudate and in the granular material about the perforation in the aortic valve. No culture experiments were made.

Resumé.—Of these eight cases, the instance of tricuspid endocarditis appears to be, as far as observations go, an example of primary or cryptogenetic disease of the healthy tricuspid valves. There are two instances of the not so very infrequent engraftment of an acute ulcerative process upon the sclerotic valves of chronic heart disease without the known presence of any wound, septic process or acute infectious disease. Then there are two cases connected with external lesions through which the infection might have occurred; in

one, the probable atrium, was a superficial burn, but this case was further complicated by a sero-fibrinous pericarditis whose exact relation to the malignant endocarditis can not at this time be established; in the second case, it is quite clear that a streptococcus infection took place from a grangrenous foot, causing a pulmonary abscess, acute aortic ulceration, and a suppurative anæmic renal infarct.

The three remaining cases are associated with acute diseases elsewhere in the body; one with a double fibrinous pneumonia, one with an acute leptomeningitis, the infection coming from an unknown source; the third case of this kind occurred in a man who died with the diagnosis of empyæma following lobar pneumonia.

All the cases occurred in men belonging to the laboring class, the youngest being twenty-four, the oldest fifty years of age.

There was one instance of triscuspid and one of mitral disease; in the other six cases the aortic valves were primarily involved, and in three the mural endocardium showed areas of necrosis and ulceration, which, in one instance, led to the production of an aneurism of the undefended space and rupture into the right auricle; in one case the aorta was attacked by the extension of the process from one of the valves. It is also of interest to note the spot of vegetation or necrosis in the center of the ventricular surface of the anterior mitral flap, where it would come in contact with the vegetating mass or aneurismal bulging of the aortic valves; this spot consequently appears to be due to contact infection and was present in three of the six instances of aortic disease. In three of the aortic cases, the valves were the seat of a chronic endocarditis upon which the acute process implanted itself; in one of these cases the bacteriologic examination failed to reveal any bacteria, and it would seem that the inflammatory and necrotic changes in the endocardium had fallen into temporary or permanent quiet, suggesting the probability of recovery from the acute symptoms; this corresponds well with the clinical

facts in the case, which show that the patient died from the effects of an uncompensated valvular lesion rather than from an acute infection (Group I, Case I). In one of these instances of acute, destructive changes developing upon sclerotic valves, was a history of previous attack of rheumatic fever obtained, to which the chronic endocarditis could be traced.

Otherwise the anatomic and histologic changes presented by these specimens are so typical and characteristic of ulcerative endocarditis as to require little elucidation ; they show vegetative and necrotic changes in profusion with the production of typical valvular aneurisms and subsequent rupture. It is quite noticeable that in only four of the cases were there evidences of embolism and infarcts, and here the embolic changes were quite limited ; as a rule the showers of infected emboli from the endocardial vegetations and ulcerations constitute a striking feature in the clinical as well as the anatomic manifestations in this form of endocarditis.

A number of facts and considerations in regard to the etiology and pathology of acute ulcerative endocarditis may be summarized as follows:

1. The disease is caused by the localization of microbes in the blood upon the endocardium. The streptococcus pyogenes, the micrococcus lanceolatus (pneumococcus), the staphylococcus pyogenes are found most frequently in the order named. Various other microbes have been found also, such as the other pus microbes, the bacterium coli commune, the gonococcus, the bacillus typhosus, as well as bacteria that have not been found in other diseases and are in so far as yet peculiar to malignant endocarditis. Recently the bacillus diphtheriæ was found in the endocardial lesion (Howard, *J. Hopk. Hosp. Bull.*, April, 1893). Experimentally the disease can be produced by first causing some mechanical or chemical injury to the valvular endocardium and subsequently injecting cultures of various bacteria into the blood, or by intravenous injections of cultures of staphylococcus pyogenes aureus on potato suspended in water with scrapings from the

potato when the micrococcous agglomerations attach themselves to the endocardium more readily than the single cocci (Rosenbach, Wyssokowitch, Weichselbaum, Prudden, Fränkel and Sänger, Netter, Gerarieu, Ribbert).

2. Acute ulcerative endocarditis is met with as a secondary lesion in the acute infectious diseases, notably and most frequently pneumonia, also in meningitis, acute articular rheumatism, the specific fevers, gonorrhœa, dysentery and so on. It is frequently incorporated into suppurative, septic and pyæmic processes. Finally it may occur as a primary or cryptogenetic affection, developing without any known or demonstrable infection atrium. From the mycotic endocardial foci, microbes and infected fragments may be carried away by the blood current and give rise to embolism in the various parts of the body, local necroses, and secondary pus accumulations.

3. In over one-half of the cases (three-fourths according to Osler), the acute ulceration is implanted on an old valvular lesion, the absence of endothelium and the roughness presenting assailable points for microbic invasion. This is the only competent reason for the occurrence of an overwhelming majority of the instances in the left heart, but the explanation is not complete, because of the cases affecting primarily healthy valves over two-thirds occur in the left side and about one one-third in the right half.*

EXPLANATION OF PLATE:

FIG. 1. Acute ulcerative endocarditis of tricuspid valve with rupture of valve aneurism through which match has been passed. Group I.

FIG. 2. Acute ulcerative endocarditis engrafted on sclerotic aortic valves; perforated aneurism; necrotic spot in center of anterior mitral flap. Chronic mitral endocarditis. Group II, Case I.

FIG. 3. Acute ulcerative endocarditis of mitral valves following lobar pneumonia. Group IV, Case I.

FIG. 4. Acute ulcerative endocarditis of aortic valves; ruptured aneurism; necrotic spot in center of anterior cusp. Group IV, Case 3. Acute leptomeningitis.

*Out of seventy-eight cases of ulcerative endocarditis of healthy valves, twenty-four were right sided and fifty-four left sided.

NOTE.—In Hamilton's Text-Book of Pathology, Vol. I, will be found references to the more important literature on ulcerative or malignant endocarditis.

DISCUSSION.

Dr. Robert H. Babcock, Chicago:

This subject is one of absorbing interest, but in the paper just presented the points have been covered with such accuracy, such clearness and science, that it seems there is but little left to be added. However, there are a few facts which make this collection of cases peculiarly interesting; in one case the lesions were found in the right side of the heart. Dr. Hektoen referred to the great frequency with which ulcerative endocarditis is found in the left side, and suggests that it is due to an acute process on an old chronic wound; but this is not a sufficient explanation for its frequent occurrence on the left side, since, in all probability, simple or vegetative endocarditis is also of bacterial origin, and why should bacteria which leads to the formation of verrucose endocarditis lodge in the left side of the heart in preference to the right? Fränzel and Sunter are of the opinion that there is a strong etiological connection between simple and acute endocarditis; that bacteria are found in all forms of endocarditis, except that due to atheromatous change. Virchow has suggested that the lodgment of micro-organisms in the left side might be due to the fact that under greater blood pressure in the left ventricle germs were forced between the cells of the endothelium. Sunter suggests that, inasmuch as they are probably deposited outside of the blood, as maintained by Orr, there is something which renders the oxygenated blood more latent, or which makes it contain a larger number of micro-organisms, or which in oxygenated blood, favors free development, and this is probably the discovery made by La Force, that oxygenated blood is essential to the growth of micro-organisms, therefore they flourish in the arterial blood of the left side of the heart in preference to the venous blood of the right side; and yet here is a case where we have acute endocarditis of the tricuspid valves; the case is therefore one of peculiar interest. Another case of interest is the association of endocarditis with pneumonia. According to many observers, pneumonia is peculiarly apt to be associated, when complicated by endocarditis, with the ulcerative malignant variety. It is of interest, too, because we find that the endocarditis may be set up by pathogenic as well as pyogenic organisms, and this may possibly throw some light upon the confusion in the forms of ulcerative endocarditis on which Prudden comments. He states that there are really two varieties of ulcerative endocarditis, that are clinically distinguished, and may, perhaps, be otherwise distinguished. In both there are the ulcers and the thrombic mass upon the endocardium, but in one the disease seems to be limited to the heart, and in the other there are septic embol-

isms, and may it not be that in those forms in which we have the phenomena of septic emboli that the disease is due to the pus-producing microbes? whereas in those forms in which the heart changes are especially prominent, and not the constitutional disturbances, the changes may be due to pathogenic organisms; then the question arises, why should certain changes be ulcerative and others simply endocarditis? Is it due to certain nutritional changes, possibly in the endocardium; or is it due to the fact that in one the micro-organisms abound in greater numbers? These various questions are not of interest barely from a theoretical standpoint; they illustrate the view that endocarditis may be complicated with infectious diseases. Horsley has laid stress upon this, since his observations would appear to show that endocarditis may follow pneumonia many months after recovery from that disease, and he states that practitioners should carefully observe their patients who have recovered from various infectious diseases, for a considerable length of time. The cases are of practical interest also in reference, not only to the clinical history and diagnosis, but the treatment of ulcerative endocarditis. It is usually stated to be fatal; the prognosis is absolutely unfavorable. If there are two varieties — one in which we have the phenomena of septic embolism, and one in which the lesion is confined to the heart, without grave constitutional disturbances — that may throw some light upon recent cases reported of recovery from apparent ulcerative endocarditis. A Swedish physician reported, a year or two ago, the case of a lad in whom there was evidently an endocardial lesion, and in the course of his illness there were atoms, apparently of minute emboli, sent into the periphery of the body, with the characteristic development of minute purpuric or hemorrhagic spots. The case recovered. If that case was ulcerative endocarditis, perhaps it was one in which the lesion was mainly one of coagulation necrosis, and the tiny particles swept into the circulation were not truly septic, but were simply particles of degenerated endocardium. Another physician, I think English, has reported a case of apparently ulcerative endocarditis, with recovery, where corrosive sublimate was used in large doses, and he is inclined to attribute the happy result of the case to the corrosive sublimate. That, too, probably belongs to the variety in which the phenomena were not so distinctly septic; for, when we get the pneumonic or septic emboli, the case is almost invariably fatal.

That there are two varieties of cases is borne out by the statement of Dr. Hektoen. Four of these cases showed plainly embolic phenomena and four did not. If physicians will bear these facts in mind, it may aid them in making a diagnosis. And yet unfortunately the diagnosis of these cases is particularly easy when we

have the phenomena of septic embolism, and particularly difficult when they are wanting.

Dr. J. B. Herrick, Chicago:

The uniform excellence of Dr. Hektoen's paper almost precludes criticism. It is to me extremely interesting, that in his series of cases, there has been brought out clearly the fact, that the valve which has been previously damaged by chronic sclerotic changes, is the valve that is the site of election for micro-organisms that produce endocarditis of the malignant type. There are two conditions necessary to malignant endocarditis: first, micro-organisms in the blood; and secondly, a suitable nidus upon the endocardium where they may develop. The organisms gain access to the blood through some visible wound, traumatic or surgical, or some suppurative focus, as the middle ear. The wound, or suppurative focus, may be invisible and undemonstrable during life. The autopsy may disclose an unsuspected intestinal ulcer, a prostatic abscess, a suppurating gall-bladder. The damaged valve furnishes the requisite nidus. It is difficult to make a clinical, and even *post mortem*, distinction between the cases of so-called acute, simple or benignant endocarditis and malignant endocarditis, and I think the tendency of authors to-day is to draw no especial line of distinction between these two classes of disease; certainly malignant endocarditis is microbic in origin, and certainly in many cases of the so-called vegetative, or simple variety, micro-organisms have been found. No microbes peculiar to each form of the disease have been isolated. Then, too, the term ulcerative endocarditis is going out of fashion, and in its place the term malignant, or infectious, is substituted, and for this reason: some cases of endocarditis, with all the symptoms of septicæmia, are shown *post mortem* not to have an anatomical ulcer, as did all the cases described by Dr. Hektoen, and yet they are as septic and fatal as those that do have an ulcer, and, so far as known, etiologically identical. I trust Dr. Earle will tell us of a case which he had, and which I was privileged to see *post mortem*, in which no anatomical ulcer was detected, but in which there were embolic infarctions in many organs, and a pronounced vegetative endocarditis, with septicemia as a cause of death. That seemed to me a case of malignant endocarditis, although it could not be termed ulcerative. I am sure, from recent reading, that the statement of Dr. Hektoen is true, that cases of primary malignant endocarditis are found in the right heart much more frequently than is generally supposed. No adequate explanation why the majority of cases occur in the left heart has as yet been given. Rosenbach believes that oftentimes the micro-organisms, or their chemical products, which he believes may cause the endocarditis, pass through

the right heart into the lungs, and so to the left heart, where they excite the endocardial inflammation.

The clinical aspect of infectious endocarditis is of great interest, chiefly from a diagnostic standpoint. There are, of course, many cases in which the diagnosis is extremely easy; in others it is extremely difficult, and in some, I believe, practically impossible. The cases given by Dr. Hektoen illustrate well the modes of onset, the various symptoms, the chills, irregular in character, the erratic course of the temperature, and the evidences of pronounced septicæmia oftentimes with symptoms of emboli. These cases, especially where the heart is carefully examined from time to time, can usually be diagnosed. One reason the disease is often overlooked, is because it is not sought for. Where no heart murmur exists, the diagnosis is difficult. That class of cases which presents the symptoms of typhoid fever furnishes the greatest difficulty to the diagnostician. I have attempted to group together some of the differential diagnostic points: First, the infection focus, where we suspect septic endocarditis, is to be carefully sought for. In the next place, chills in typhoid fever are rare, and where we have chills early and chills late, and especially very irregularly, with no periodicity, we must suspect something other than typhoid fever. Again, the symptoms of emboli are usually pronounced. The lungs, kidneys, brain, peripheral arteries, spleen, are to be carefully examined for evidences of emboli. Fränzel claims that he can often, by palpitation, locate a point of tenderness in an infarcted spleen, this tender point corresponding to the damaged area. We should remember that not only are these infarcts present in these organs, but we have emboli in the retina and in the skin. The skin lesion of malignant endocarditis, when it is present, makes, I believe, one of the most confusing phenomena we have in attempting to make a differential diagnosis. I know of one case of ulcerative endocarditis in which I saw a few reddish papules, and I was then almost positive that it was typhoid fever; but as the disease progressed I was obliged to change my diagnosis. The patient ultimately died, I am sure from the clinical history, of malignant endocarditis. Fränzel claims that in the centre of the little papules in malignant endocarditis there is an anæmic area, and around this pale centre a reddish zone of hyperæmia. This is different from the rose spots of typhoid fever, where the most intensely congested area is in the centre. I had not read Fränzel's article when I saw this patient, and I did not observe these spots very closely, so I cannot say whether or not this case substantiates Fränzel's statement.

The pulse and respiration of the patient in endocarditis are usually more rapid much earlier than in typhoid fever. Typhoid is a disease in which we have pre-eminently a slow pulse, in spite of

high temperature. But where we find, in a patient with suspected typhoid, on the third or fourth day of the disease, a pulse of 130 to 140, irregular, with the respiration rapid, it should always excite suspicion that the disease is something other than typhoid. The rapid pulse of typhoid comes on late in the disease, when collapse is imminent, or asthenia pronounced.

Several observers, within the last two or three years, have made bacteriological examinations of the blood of cases of endocarditis, and have demonstrated microscopically, as well as by cultures and innoculation, the presence of the staphylococcus and streptococcus, so that bacteriological examination may be a practical aid to diagnosis.

I have seen five or six cases of malignant endocarditis. The one I referred to occurred in a pregnant woman, no infection *atrium* was detected, and the diagnosis was typhoid fever. No autopsy was made. In the second patient the infection atrium was assumed to be the uterus. The patient came into the Presbyterian Hospital delirious, and there was a suspicion of abortion. The erratic chills, the delirium, the heart murmur, the evidences of pronounced sepsis, led to a diagnosis of ulcerative endocarditis. In this case the aortic and mitral valves were both involved. The only ulcer that could be detected *post mortem* was on the mural endocardium, and here there was a crater-like opening which would have held a small pea, and which contained a few drops of pus. There were infarcts in the kidneys and spleen.

There is also at present under observation, in the County Hospital, a patient who has a history of rheumatic endocarditis of two or three years standing. For a few days, every two or three days, she has a rise of temperature to 103 or 104 deg., the pulse runs up to 160, she becomes delirious; there is a distinct mitral systolic murmur. The case seems to be one of malignant endocarditis. I have not seen her for three or four days and do not know whether she is now alive.

The question as to the recovery of some of these cases has been touched upon. It is probable that some cases of malignant mycotic endocarditis recover, or at least become chronic. How can we draw the line of distinction between the oft-observed cases of recurring endocarditis and the ulcerative endocarditis? The fact of the temporary recovery of the one, and the fatal termination of the other, seems to indicate a difference in degree rather than in kind. In a series of thirteen cases of ulcerative endocarditis, recently reported from Eichhorst's clinic, two are said to have recovered.

Dr. Charles W. Earle, Chicago:

Dr. Herrick has referred to a case which he saw *post mortem*; later I shall ask Dr. Hektoen to give briefly the pathological conditions found.

The question we have been discussing during the last hour is one of the most interesting which at this time is engaging our attention. I am very sure it is clearing up some diagnoses that were not made a few years ago. It is also my opinion that this disease is taking place with greater frequency than in former years, for during the last two years I have seen certainly four cases, and I think five. I will simply narrate one: A lady living on Oakley avenue, in this city, passed through what I believed at that time was a moderately severe, but not dangerous, attack of typhoid fever. I treated her for this disease—prescribing mostly rest and fluid diet—and if there was any mistake in the diagnosis I am willing to stand the responsibility. She progressed satisfactorily until the time arrived when she should have convalesced. Her convalescence, however, was not as perfect as it should have been, and one day she began to complain bitterly of a terrible pain in the right limb, which she referred to a point about half way between the knee and the foot. At that time there was also a pain around the anal opening and around the vagina, but the pain in the lower extremity was so severe that it engaged her attention and ours. In the course of a couple of days the toes began to grow cold; in two or three days the foot and limb were cold, and there was unmistakable evidence of stenosis of one of the blood vessels high up. The line of demarcation was never sharply present, but the amputation was performed at the middle third of the thigh. There was absolutely no hemorrhage, even after the constriction bandage was removed. Notwithstanding everything that was done, after lingering two or three weeks, the patient died. At the autopsy it was found that hardly any attempt had been made in the healing process, and total occlusion of the principal blood vessel, high up in the pelvis, was found. The plug which produced this stenosis could not only be seen, but it could be felt. A central difficulty, involving the heart, was found, and the pathological lesions throughout the body were of a most interesting nature. I shall now ask Dr. Hektoen to give, with minuteness, the pathological findings in this case.

Dr. Ludvig Hektoen, Chicago:

The changes in the heart were briefly as follows: There was a chronic mitral endocarditis, attributable to an attack of rheumatism many years before; then there was, anatomically, the lesion of acute simple endocarditis; there was no ulceration, simply vegetation and thrombosis. One of the thrombotic masses had become detached, and had been carried by the circulation down to the bifurcation of the left common iliac, at which point it completely occluded the external iliac vessel, resulting in gangrene of the left lower extremity. In addition there was a large parietal thrombus

in the right auricle, which had no direct connection with the acute or chronic endocarditis ; it was simply a thrombus attached to the wall of the right auricle. From the surface of this thrombus masses had been swept off into the lungs, giving rise to characteristic pulmonary infarcts, none of which had undergone suppuration.

Dr. C. W. Earle :

I have only to say, in conclusion, that it appears to me that the study of the etiology and diseases of the blood vessels, as we are now doing, is going to give us an insight into certain maladies of which, up to this time, we have known comparatively nothing.

Dr. Ludvig Hektoen, Chicago, in closing the discussion, said :

With reference to the infection taking place most frequently on the left side of the heart, I have this to add : I took the pains to look up in the literature seventy-eight cases of acute ulcerative endocarditis, occurring upon previously healthy valves. Of these seventy-eight cases twenty-four occurred in the right side of the heart, and fifty-four in the left side, showing that more than two-thirds of the cases of ulcerative endocarditis, affecting originally healthy valves, occur in the left side of the heart. For this there is no perfectly patent or satisfactory reason. It has not been shown that particular valves are liable to be affected in particular diseases, although it is generally claimed that when the infection has a peripheral source, as, for instance, an ulcer upon the leg, or decomposing intrauterine masses, the right side of the heart is most frequently affected.

Every case of ulcerative endocarditis should be studied bacteriologically. By so doing we might hope to learn more with reference to the points referred to.

Endocarditis is of practical interest to the surgeon, because of the fact that it is so liable to become implanted upon valves, the seat of chronic disease, when there are external lesions through which microbes may gain entrance to the circulation ; consequently Prudden, among others, lays particular stress on the fact that surgeons must be especially conscientious in their antiseptic measures with those patients who are suffering from chronic valvular heart disease, because three-fourths of all cases of malignant endocarditis are engrafted on chronic valvular heart disease.

I believe the distinction between simple or verrucose endocarditis and malignant endocarditis is largely one of degree. The same bacteria that cause malignant endocardial inflammation have been found in verrucose endocarditis. In ulcerative or malignant endocarditis the changes are apparently so intense as to result in destruction of tissue. In the verrucose endocarditis, on the other hand, the changes are principally, if not entirely, productive, result-

ing in the formation of the little coxcomb-like granulations, which the specimens passed around show, and upon these form the thrombotic masses which may be subsequently swept off in the circulation and occlude important vessels.

Dr. Herrick referred to a patient in the County Hospital, in which case there was a diagnosis made of malignant endocarditis engrafted upon chronic changes. That patient is dead. The *post mortem* examination showed chronic mitral valvular disease and the lesions of simple endocarditis — no ulceration. The examination was limited entirely to the heart, and was consequently very unsatisfactory.

I wish to thank the gentlemen for the very thorough and able discussion they have given my paper.

A Member:

I wish to ask the gentlemen who have made a special study of the subject what relation rheumatism sustains to ulcerative endocarditis?

Dr. Hektoen:

The most frequent form of endocarditis in acute articular rheumatism is the simple, verrucose form; occasionally the malignant, ulcerative form develops in an attack of articular rheumatism, but only occasionally. That the chronic valvular diseases which follow simple endocarditis predispose to the subsequent development of endocardial ulceration, there is no doubt, so that rheumatic fever bears a double relation, so to speak, to the development of ulcerative endocarditis.

EXOPHTHALMIC GOITRE.

BY FRANK S. JOHNSON, M.D., CHICAGO.

GENTLEMEN: I beg to call attention to a small series of cases of exophthalmic goitre, presenting in the aggregate nearly all of the symptoms found associated with this peculiar disease, but in almost every instance differing from each other in the grouping of symptoms.

The disease, although not common, is, on the other hand, not rare. It has been carefully studied from many points of view, and has been judged under the influence of different habits of thought.

The physiological phenomena are so varied and widespread as to leave the student in a maze of intricacies that baffles all the knowledge and ingenuity that have been applied to the subject. And anatomical investigations have revealed either nothing, or lesions of different natures in different organs, and have, perhaps, been as misleading as instructive.

The classical trio of symptoms have been added to again and again. We have now a long array, not all present in all cases, and not equally developed in those cases where present in common. But in every case the one dominating condition —that influences all the others, or upon which they depend— appears to be the unstable condition of the nervous system, the lack of repose.

Slight emotional disturbances, or mental or physical effort, was, in all of the cases that I have had opportunity of seeing, followed by psychical or physiological disturbances.

Other evidences of the disease are found in disturbed performances of nearly all the bodily functions, and the most

prominent are also associated with anatomical lesions or disturbed relations of parts.

The cardinal points upon which diagnosis depends, viz.: exophthalmia, goitre, tachycardia, and tremor, are not all uniformly present, are subject to modification, and usually have incidental disturbances associated with them. For reference, I beg to call attention to the points mentioned by the writers upon the subject.

Prominence of the eyes is one of the most striking features of the disease. It may appear at its inception, or may be late in appearance. The phenomenon is usually symmetrical, but frequently is not so—it is very rarely single—anomalous cases have been noted where the eyes remained normal. The prominence of the eyes is due to vascular fullness, especially of the orbital vein, and to lack of restraint by the retracted lids, and may disappear after death. In the incipiency of the disease the eyeball can be pushed back into its normal position, but not so in advanced cases, because of an increased amount of connective tissue within the orbit. The widely open lids giving the patient a wild, staring expression (Stellway's sign), is due to muscular retraction—increased muscular tones—of the Levator palpebræ, or of the M. superior palpebræ of Muller receiving its innervation from the grand sympathetic. V. Graefe called special attention to a phenomenon dependent upon this faulty innervation—the inco-ordination of the lid and globe in looking downward, the lid movement being retracted.

The sign is not present in all cases, and is not pathognomic. It disappears after administration of morphine. Sharkey found it twelve times in six hundred and thirteen patients, with other troubles. In extreme exophthalmos the globe may almost literally be pushed from its socket, and not infrequently the lids do not close during sleep, and in some cases cannot be closed at any time.

The eye movements are limited in extent in all directions by the forward displacement of the globe. This is most ap-

parent in strained voluntary effort, as in the forced convergence for near vision (sign of Moebius). It occurs in other than Basidow's disease, is not dependent upon paralysis, nor brought to the consciousness of the patient by double vision, although pariesis of the ocular muscles has been repeatedly observed, and was found in one of the cases summarized here.

Nystagmus (Freund) and tremor of the eyeball have been noted; the latter was found to cease where the lids were closed, and improved under galvanization.

Diminution of corneal sensibility, due to lack of moisture (Sattler), and corneal ulcer (Liebrech) to long continued exposure, are sometimes incidents of the disease.

Asthenopia has also been noted, and atrophy of the optic nerve, thought by G. Lee to proceed from lesions in the cord. The pupils are dilated and rather inactive.

The eye phenomena, although most striking features, do not seem as essential to the disease as those of the heart and circulation. The heart's action is violent and rapid, often tumultuous, irregular, and exceedingly sensitive to disturbing influences. Rapidity of heart's action, without increase in the force of heart beat, is evidence against exophthalmic goitre. There is sometimes pain in the region of the heart, seemingly independent of excited action; in one of the cases to be here reported it is sometimes present when the heart is beating quietly. The larger arteries pulsate violently; carotid and abdominal pulsations are striking, while the distal pulses, the radial for example, may be small and soft, but are not uniformly so.

Heart murmurs are exceedingly frequent, usually mitral, systolic, loudest at base (Gowers), referable either to cardiac dilatation following disturbed innervation and activity, or to the altered relations between the heart and the vessels of exit.

Sansom reviews the cardiac and vascular disturbances in support of the conclusion of Brown-Sequard and Felihue, Jackson and Sattler, arrived at through observed pathological facts

and through experimental research. Cardiac irregularity is an extremely common manifestation, and is considered by Sansom as primarily due, in M. B., to lesions of the centers governing circulation, often much exaggerated by emotional or reflex disturbances, and to changes in the substance of the heart muscle.

Valvular complications frequently co-exist, and add to the functional embarrassment.

When organic inability exists of the heart muscle to perform its function, hypertrophy, but especially dilatation, ensues more rapidly than in similar cases with undisturbed innervation.

Goitre is so prominent a feature, and so frequently present, that it has been incorporated in the nomenclature of the disease oftener than any other sign. The swelling is usually in the lateral lobes of the thyroid, often unequal on the two sides—is elastic, pulsating—often has a perceptible thrill, and there is present a systole murmur.

The enlargement varies, in size and firmness, with the force and rapidity of the heart's action (Moebius). In cases of long standing, the pulsation, thrill and murmur are sometimes absent; the goitre then is found to be hard and unyielding, feeling like a fibrous growth. In not a few instances, the disease is preceded for some time—months or years—by enlargement of the thyroid gland (H. W. G. Mackenzie, Susvenes).

On the other hand, well authenticated cases have been reported in which goitre was absent.

Of the associated functional perversions, the commonest fall to the lot of women in the disturbances of menstruation. The menses are usually suspended, or are scanty and irregular. They may be normal, and in exceptional instances they are increased in frequency and amount. Scanty and irregular menstruation is the rule, regular menstruation the exception, and an exaggerated catameneal function is, I think, very rare. Atrophy of the genitalia is common.

Atrophy of the mammary gland is common, but hypertrophic changes were reported by Basedow in the case of a man, and by Frousseau in the case of a woman, who was otherwise extremely emaciated.

Disturbance of the digestive functions are quite common. Intercurrent diarrhœas are frequent—the bowels are seldom constipated, are often irregular.

The appetite may remain good, or be perverted or lost; or there may be nausea and vomiting. Federu has laid much stress on the presence of intestinal atomy, even assigning to it causal relations.

The respiratory function is affected, much as it would be in a person under nervous excitement; the breathing is rapid and the chest expansion diminished (Dr. Bryson's sign).

The blood is usually impoverished, and the patients often markedly anæmic. Reynolds reports anæmia in forty-eigh out of forty-nine cases examined by him.

The general nutrition is always disturbed; the sufferers almost invariably lose flesh; the skin becomes atrophic; there is loss of muscular power; in long and severe cases a cachectic condition is developed; cachexie thyloideicin of the French writers.

In some instances there is marked pigmentation of the skin, closely resembling that in Addison's disease. The cutaneous blood supply is extremely fluctuating, the face and skin of the trunk flushing easily. Hyperidrosis is an almost constant condition; it may be slight, but is sometimes excessive.

The bodily temperature is usually elevated—not continually—the temperature may be normal for long periods, but there is fever in most, if not all, cases at some time. It may be ephemeral or continuous, intermittent, remittent, or typhoid in its severity—ushering in the disease, reappearing from time to time, and present in case of fatal termination. As before stated, however, the symptoms dependent upon disturbances of the nervous system are the ones invariably

present. Manifested through the muscular system there are tremors fine and rapid—eight—nine oscillations per second (P. Marie). It may be very pronounced, or scarcely perceptible; it is much increased by excitement or voluntary effort; it is very seldom, if ever, absent. Most pronounced usually in fingers and hands, it may involve the arms, facial muscles, tongue and eyelids, and the ocular muscles. It may, also, affect the lower extremities. In the more exaggerated examples it is a violent, uncontrollable trembling, and may even interfere with locomotion. It may pass beyond this, and resemble or even merge into chorea. The latter affection has been repeatedly observed as a complication of the disease under consideration, while Moebius reports a case that, beginning as morbus Basedowii, terminated in paralysis agitans.

Paraplegia and paraparesis have been noted by English writers, and particularly described by Charcot as properly belonging to the disease, apart from any association with hysterical phenomena.

Muscular cramps in the feet, legs, hands, forearms (Mackenzie), and localized muscular atrophies (Kohler, Gansel, Hahn), further indicate profound disturbances of the nervous system.

Hysteria is, however, a productive factor in most of the cases manifesting muscular cramp, the inability to be seated or to rise, and many of the pareses and paralyses. The altered visual field, and other functional perversions, are attributable to this cause.

Exophthalmic goitre has further been associated with epilepsy, which has preceded or followed the onset of the disease, also with tabes. Joffray has repeatedly observed isolated signs of exophthalmic goitre in tabetic patients, and Barie thinks that a well developed form of the disease may be an incident in the progress of tabes.

Diabetes and exophthalmic goitre have often been found in the same patient.

Goodhart, in commenting on this, ascribes the connection

between the diseases to the neurotic taint that enters into the etiology of each. More positive relationship is found in the lesions in the medulla, occasionally found in each.

The polyeuria that is sometimes found is a neurotic, and more than probably, a hysterical stigma.

Albumenuria can hardly be considered a complication. When present it may be secondary to cardiac disturbance, or merely a symptom of a coincident affection.

Strangely enough, myxœdema has also been found associated with this disease. The diseases are almost the exact antitheses of each other, anatomically and physiologically, and yet have been found associated (Kovalesoske). The patient in whom the observation was made had a bad family and personal history. The mother was an epileptic, and patient had had petit-mal for twenty years before ophthalmic goitre appeared. With the development of the signs of myxœdema the nervous excitability and the delusions were replaced by dullness of intellect and physical inactivity. This condition lasted three months, and disappeared, when only the signs of Basedow's disease remained. The reporter considered that the myxœdema was engrafted upon or replaced the older disease, and was referable to temporarily suspended functions of the thyroid.

It would consume more than the time allotted to this paper to present a full resumé of this disease. The foregoing comprise the more common and important features, as well as some of the more rarely observed facts, that may have especial significance in their relationship with this trouble.

I have notes, more or less complete, of nineteen cases. Of these, 3 were under 20 years of age ; 6 between 20 and 30; 6 between 30 and 40 ; 1 between 40 and 50; 1 between 50 and 60; 2 between 60 and 70.

In the instances where the age at onset was recorded, the disease began 4 times in childhood or youth ; 8 times between 20 and 30 ; 2 times between 40 and 40; 1 time between 50 and 60.

The heart was found enlarged in nine cases. Is noted as having been of normal size in nine cases.

In every instance the heart's action was rapid ; if not so at all times, it was very easily excited ; several patients reported that at their homes the pulse rate was frequently 70 or 80, but as counted under examination would be found 110–130.

Irregular rhythm was observed in nine cases ; in four the rhythm is recorded as regular.

Enlargement of the heart was found in nine cases ; heart murmurs in eleven cases; in three the bruit was thought to be anæmic; œdema of the lower extremities was present in one of the cases of organic heart disease. In one there was a short reduplication of the systolic sound; moderate heart pain was observed in two cases ; angina in two cases. In one of the mildest cases a dull pain was present much of the time and was independent of cardiac excitement, being equally annoying when the heart rate fell to 80 or 90, and when it was 120 or more.

Angina was observed in two cases.

Goitre was present in sixteen cases, absent in three, and was associated with pain in two cases. Thyroid pulsation was noticed in five, thrill in two cases, murmur in ten cases; once when thyroid was not perceptibly enlarged.

The eyes were found normal in five cases ; there was distinct exophthalmos in eleven ; asymmetrical or unilateral was present in several instances.

Stellwag's sign, the widely opened lids, in twelve cases ; in one without exophtholmos. V. Graefe's sign, the incoordination of the after-following lid in downward glancing, was observed in seven cases.

Moebius' sign, insufficiency of convergence, in five cases out of six where it was sought.

Becker's sign, pulsation of the retinal vessels, was present once, absent in three other cases examined, and absent at a second examination of the first mentioned case.

Of the thirteen women, four reported the menstrual function normal, four irregular and infrequent, usually scanty ; in one menstruation was profuse and frequent, recurring every two to three weeks ; was suppressed in two ; physiologically absent, with lactation, in one instance, and menopause in another.

Out of fifteen cases the intestinal discharges were reported as normal by four patients ; as varying in character and frequency by three ; diarrhœa existed or was a current disorder in seven, and constipation was the rule in one case.

Vomiting occurred as a quite prominent symptom in four cases. The urine was increased very noticeably in six out of nine cases.

Muscular tremor was found in all cases where it was sought for ; in several it was a very striking feature, and was modified by coarser trembling.

Tremor of hand and fingers was observed in thirteen cases ; of the tongue in one case.

The voice was distinctly tremulous in two cases, and one case was ushered in with quite characteristic choraic symptoms.

Insomnia was cause for complaint in three cases. Hyperdrosis was very marked in three cases. Slight elevation of bodily temperature was found in six cases.

Pulmonary tuberculosis complicated two cases ; chronic intestinal nephritis two cases, and gastric ulcer one case.

Alopecia was observed in two cases.

"Giving way of the legs," Charcot's "knee phenomenon," in one case ; vertigo in one case.

Chest expansion was so limited in one case as to attract especial notice (Dr. Bryson's sign). In three of the cases admitted to Michael Reese Hospital the blood was examined microscopically by my colleague, Dr. Goodkind ; the eisinoplicle cells were not found, as reported by Chevostek in the cases examined by him. In one very anæmic case blood examination showed 38 per cent. (Fleischell) of the normal hæmoglobin.

The electrical diagnosis depends upon increased electrical conductivity (diminished resistance). This condition is not constant; is sometimes absent; the resistance sometimes +N. It is dependent on the hyperidrosis, the atrophied skin, vasomotor instability, and vascularity of skin. It is modified by hysterical complications.

The predisposing causes in these cases were: heredity in four, and a strong neurotic taint in three cases.

Factors bearing a more immediate relation to the onset were: fright in three cases, grief in one, a severe illness (la grippe) in one, pre-existing goitre in one, fright and premature labor in one, normal confinement in one, and suppression of the menses in one.

In the literature upon this subject still other causes are mentioned: damp, chilly weather, rheumatism, pre-existing goitre. The most potent factors, however, seem to be a neurotic taint as predisposing cause, and some strong emotion, as fright or grief, as exciting cause.

Frequently the origin of disease cannot be traced, and even with all the knowledge of the subject at our command we can only assume the cause.

The nature of the disease is unknown; of the theories advanced each is supported by cases to the point, but many other cases do not seem to coincide.

Moebius argues strongly that the disease depends on altered functions of the thyroid gland, that it is the antithesis of myxœdema. The view is supported by the prompt recoveries that have followed extirpation or resection of the thyroid. He believes that a systematic intoxication results from perverted thyroid function.

The primary cause of the changes within the thyroid he does not attempt to explain beyond suggesting that in this disease, as well as in myxœdema, the thyroid lesion may be due to a poison.

Disease of the cord, medulla, and pons varolii (Hughling,

Jackson, W. Hale White, Cheadle, and M. B. White), has been found at autopsy, and has been considered the cause.

It has also been thought to depend on disease of the cervical sympathetic.

By Renant it is thought to be a febrile disease, attended with anatomical and physiological changes in the thyroid.

The absence of a definitely determined cause of the disease, and of etiological indications for treatment, measures have been largely symptomatic.

Beneficial results have frequently followed removal to high altitudes. Two cases reported by Stiller were much improved, although advanced symptoms of disturbed compensation were present, by a residence in altitudes of between 3,000 and 4,500 feet. Less than 1,500 feet seems to exert no influence on the course of the disease.

Good results have followed the use of electricity, both faradazation and galvanization of the goitre, the sympathetic, the precordia, and the obicularis palpebræ.

The treatment of the cases observed was based on general therapeutic rules, veratrum or aconite when the heart's action was rapid and strong; strophanthus, digitalis, or caffeine when less forcible; strychnine, arsenic, and bitter tonics and iron in anæmic patients.

The patients were enjoined to avoid fatigue and excitement.

Bromides and belladonna were given a few cases with good results.

Of those under treatment three apparent recoveries have occurred, five have improved, two have remained the same, four have passed from observation; the remainder, including four of those noted as improved, are still under treatment.

One patient, the notes of whose case have been lost, improved very markedly after having changed residence to a high altitude; the patient in the meantime married and bore children.

DISCUSSION.

Dr. W. E. Quine, Chicago:

The subject has been so thoroughly and systematically presented by the essayist, that there is but little room for additional remarks, and still less room for criticism.

The experience of the writer of the paper would seem to indicate that exophthalmic goitre is of more common occurrence than is generally supposed, which is in exact accordance with my own observation. I feel quite sure that cases of immature or imperfect development very often escape identification, and are considered — if not overlooked altogether — as examples of disease of some other kind. There are some things which the essayist has not had time to say, to which it might be profitable for me to direct the attention of the Section. Let me refer, in this connection, to the varying modes of onset of exophthalmic goitre. It may appear fully formed, in respect to the triad of symptoms to which reference is most frequently made, in five minutes; it may come on with violent acuteness, and in the course of a few days destroy life; or it may come on so insidiously that the patient finds it practically impossible to determine the time when derangement of health began. The disease does not always originate in the same way. If one symptom is more constant than another, it is that of vascular disturbance. It is a fact, now of familiar knowledge, that cases of immature exophthalmic goitre are not very uncommon in which the only striking clinical manifestation is that of cardiac and general vascular disturbance. I have come to be assured, of late, that many of the cases which go familiarly by the name of tachycardia, in which there is no enlargement of the thyroid, and no exophthalmos, are, in reality, examples of imperfectly developed Basedow's disease.

Another variety of vascular disturbance sometimes occurs in the course of this protean malady, which is quite different from mere excitation of the heart and vessels. I refer to arrythmia cordis. Cases of this kind are now and then met with in which there is no acceleration of the pulse, and in which the patient is so painfully conscious of the action of the heart as to be kept from sleeping by it. The sensibilities of the patient are so exalted that the slightest irregularity of the pulse, or the loss of a single beat in the action of the heart, is not only noticed but watched for. Cases of vascular disturbance, that are not explainable upon the basis of recognizable local or general disease, and cases that are persistent, even though unassociated with other manifestations of Grave's disease, may very properly be considered, in the majority of instances, as belonging to the numerous instances of imperfectly or irregularly developed varieties of that malady.

Reference has been made by the essayist, with some degree of prominence, to the influence of altitude upon the manifestations of Basedow's disease, and I refer to this phase of the subject in order to say that my own observation has been curiously different from and even contradictory of his. Two recent cases of the disorder are at present clearly in my mind in which altitude exerted a powerfully injurious influence. One of them is now under my treatment. In this case the influence of altitude was very earnestly sought and more eagerly fled from. The patient went to Colorado Springs, and remained in or near that city for a number of months, but with the effect of immediate, decided and persistent aggravation of all the characteristic symptoms of the disorder. The other patient had resided, for a shorter time, in Albuquerque, New Mexico, and returned to Chicago in much worse condition than when she left. My observation, limited to these two cases, would seem to suggest the probability that altitude, *per se*, tends to aggravate, rather than to improve, the vascular derangements and the general morbid excitability which are such prominent features of the affection.

Reference has been made to Von Graefe's sign, in which lack of co-ordination occurs between the movements of the eyeball and those of the upper lid, whereby, when the patient glances downward, the upper lid does not follow the movement of the eyeball, but, standing apparently still, exposes the portion of the sclerotic above the cornea. I have sought diligently for this sign for many years. I may be uncommonly dull as to the recognition of it when it is present, and I am obliged to admit that I have not seen it strongly marked in a single instance of the disease. I have seen it slightly and variably developed in some cases, but they have been very few in number. I have come to regard Von Graefe's sign as one of the most inconstant features of the disease. It is a suggestive fact, that the conclusions of Von Graefe, which resulted in his directing attention to this sign, were based upon the study of thirteen cases, of which ten occurred in male subjects. At once the idea comes to mind that Von Graefe's sign may be of more common occurrence, in Grave's disease, among male subjects than among female. This disease has been, in my practice, extraordinarily uncommon in male subjects, and during the age of childhood. But two examples of it have come under my observation in males, and no example that was recognized occurred in the person of a child.

The exophthalmos may persist after the patient appears to be otherwise perfectly well; but some degree of goitre is likely to be associated with it. When recovery does take place, it may be indicated by comparative composure and stability of the circulation, and this condition of stability of circulation may continue even throughout the remainder of life, or for a considerable number of years;

whereas, little if any diminution occurs in the prominence of the eyeballs. Instances have come under my observation of such suddenness of development of the disease as that an enormous goitre appeared within twenty-four hours. In one case, now in mind, a large asymmetrical goitre occurred in a few hours after a violent fright.

A symptom, which was not alluded to by the essayist, is cough. I have found, in a number of cases, what might be designated as a dry, nervous, or hacking cough, unattended by expectoration. A case, that is within reach at the present time, is an example in point. The patient had had such a cough for months, and also moderate elevation of temperature, and very great acceleration of the pulse. This patient was the one referred so as having been sent to Colorado Springs, in the hope that she might get well of pulmonary consumption, which she did not have. She was not sent there by me, although, I'm afraid, I've often done worse things than that. With the cough there is usually no expectoration, so that a microscopic examination of sputa may be out of the question. Error in diagnosis, based upon accelerated pulse, emaciation, slight fever, and persistent dry cough, may very easily be made, even by the most acute practitioner. A change in the quality, especially in the volume, of the voice, is a fairly constant symptom of Graves' disease. Those who have the affection plainly marked are usually unable to sing, although they had been good singers before. The voice ordinarily becomes thin and piping in character, and of limited range. Two of the cases referred to by the essayist exhibited the phenomenon of alopecia, or loss of hair. Practically, every case of Graves' disease that I have seen, and have been able to keep under observation a considerable length of time, has been attended by loss of hair. I have not seen a single example, which had existed as long as a year or two, in which the normal or ordinary luxuriance of hair growth had been preserved.

When my attention began to be directed to this subject, the theory respecting its pathological nature, which obtained general acceptance, referred to the probability of irritative or vascular changes in the vasomotor centres as being the primary and essential element. This central derangement, it was assumed, resulted in the dilation of arteries in the head, neck and other parts of the body. In a case under treatment at the time I was sorely exercised, because the lady was not only very ill but pregnant, and expecting to be confined any day. I confidently expected, and was prepared for, frightful hemorrhage, because the arterioles were dilated, you know. But no hemorrhage occurred. I have since attended the same lady in confinement, three or four times, and other ladies under similar circumstances, and I now say that no

greater liability to uterine hemorrhage exists in this disease than in circumstances of perfect health. On the contrary, there seems to be unusually efficient uterine contraction and retraction, and unusually prompt involution of the organ. The frequent association of Graves' disease with glycosuria has been referred to by the essayist, and this association seems to confirm the view of morbid anatomy which locates the primary seat of derangement in the medulla in, or very near to, the point of origin of the inhibitory part of the vagus nerve.

Reference has been made to the tremor which, by some of our most authoritative writers, is included as one of the cardinal symptoms, deserving to be associated with the acceleration of the heart, the exophthalmos and the goitre. I refer to this symptom now in order to express the interest I feel in the statement made by the essayist that, in his patients, the tremor affected the head and eyes and the most distal parts of the extremities of the body. My own idea, up to this time, has been that the tremor has not been known to involve muscles of the face or neck, or the intrinsic muscles of the hands or feet. Tremor of the hands and feet is of common occurrence, but it is due, I have supposed, to the propagation of motion from the fibrillary contractions of the muscles of the forearm, and other parts of the body. This symptom, I confess, I have not studied very systematically or attentively, and, consequently, I am not competent to express an opinion concerning it. I may, nevertheless, say that I have not seen any cases of tremor affecting the head, eyes or neck, and that if vibratile contractions occurred in the hands or feet of any of my cases, my observation has been hasty, inattentive and faulty—as it often is.

I congratulate the Section upon the excellent thoroughness of the essay.

Dr. J. D. Skeer, Chicago :

There is one symptom in the early stage of exophthalmic goitre that has presented itself to my observation, that I do not find recorded in the books on this subject. It is this : that when the patient is lying down the ophthalmos disappears, and when sitting up, in the bed or on a chair, it returns again. This may assist us in our diagnosis in the early stage of the disease.

Very little has been said on the subject of treatment. I have a case now in my practice which has been standing about two years. The first symptom was enlargement of the thyroid gland, on the right side. She was treated for ordinary goitre ; but I was apprehensive that it was something more profound than ordinary goitre. The glassy appearance of the eyes and disturbance of the heart commenced about a year after the first symptoms appeared. Six months later I noticed a slight exophthalmos on the right side, which

would disappear when she was lying down and return again when she raised up. She had the usual treatment of nux vomica, strophanthus, digitalis, iron and tonics, and the bromides and iodides, but she did not improve. I instituted massage three times a week; she would go to bed with a pulse of 120, and after a massage treatment it would go down to 80. For the past six months she has taken, with a good degree of regularity, a pill composed of reduced iron, 2 gr.; pepsin scales, 2 gr.; sulphate quinine, 1 gr, and extract of belladonna, ¼ gr., four times daily. The symptoms of goitre have disappeared and only slight exophthalmos remains. I attribute much of the improvement in this case to the massage and the belladonna—the belladonna having been recommended by Dr. G. A. Conant, of New York City.

Dr. Ludvig Hektoen, Chicago:

I wish to refer very briefly to an instance of exophthalmic goitre in which I made the post mortem examination and studied the tissues with the microscope subsequently. The patient was twenty-nine years old; she had had a goitre for eighteen months and the active symptoms of the disease for one year. The clinical cause of death was persistent vomiting. About two months before death an elastic area appeared on the anterior surface of the right leg, below the knee, which was regarded as an area of myxœdema. The post mortem examination showed a goitre weighing 110 grammes; the thyroid almost completely encircled the trachea and compressed it from side to side. On section the thyroid gland was hard and fibrous; under the microscope it consisted almost exclusively of connective tissue with only a few normal follicles left. There was present a chronic diffuse nephritis. The brain and spinal cord were both negative. The sympathetic ganglia in the cervical region have been examined, but the result is not quite satisfactorily determined as yet. There appears to be an unusual number of nuclei in the ganglia; the ganglion cells are pigmented, but previous observations have shown that such changes may occur in healthy individuals after they reach adult life; as a matter of fact, histologically normal sympathetic ganglia are only found, according to White and others, in very early life. The orbital cavities were negative. The organ which presented the most unusual changes was a persistent thymus gland, which was large, covering the region from the lower border of the thyroid down over the middle of the pericardium. On microscopic examination this thymus shows marked progressive changes; the follicles are filled with nucleated cells; the nuclei stain deeply and show a large amount of active protoplasm, and throughout the entire gland the number of follicles and the number of cells in the follicles is remarkable. There is also noticed in the interior of some of the follicles what seems like

colloid material, although on this point no definite statement can as yet be made. Enlarged and persistent thymus glands are quite frequently found in exophthalmic goitre, so frequently that the subject must attract some attention. In such a thymus which, as already stated, is progressive and active, the question suggests itself whether or not this gland is performing some vicarious or compensatory function. If it is possible to demonstrate conclusively that there is colloid material in the interior of the thymus gland, such a view would seem quite reasonable.

In reference to the treatment of exophthalmic goitre, it would seem to me extremely interesting to know what effect, if any, the use of the recent thyroid preparations would have upon the course of the disease.

Dr. Frank Johnson, in closing the discussion, said :

I have one case under observation that I think is exophthalmic goitre. The symptoms are of tachycardia, with hydronephrosis and a very marked tremor in the muscles of the hand and arm. The heart's action is not very rapid, 80 or 90 while the patient is at rest. When the nurse takes the pulse it is slow, but when the doctor comes it is 120. The patient is bright and cheerful, but extremely excitable ; when lying down the effort to sit up in bed will raise the pulse from ten to fifteen beats instantly.

Dr. Quine spoke of arythemia. I have one patient, a peculiar case, where the goitre is quite well marked. The eye symptoms are absent ; the heart's action is very rapid. On her visit to the office the pulse was 156, at subsequent visits it was 120, and it has been less than 70 at home. She says the disease began in childhood. At night there are symptoms of an extremely weak heart ; her pulse will drop below 60, as it seems to her, and with it there is a feeling of great depression, but immediately on awakening the pulse becomes rapid. This patient has great menstrual disturbance, the flow being unusually frequent and severe ; there seems to be an extraordinary congestion of the uterus at the time of menstruation. The profuse menstruation has been in a large measure corrected by the use of ergot and by rectal injections of strong solutions of sulphate of soda. She is always constipated at the time of menstruation.

I have never known of dry cough as a symptom of this disease. I have never recognized it in any cases ; but while Dr. Quine was speaking of this as a symptom, a case came to my mind that I had never thought of as being exophthalmic goitre—another case of tachycardia. There are no goitre symptoms, no staring appearance, no Von Graefe's sign, no exophthalmos. Stellwag's sign is sometimes present ; the patient is emaciated and has a persistent, dry,

hacking cough. Since Dr. Quine has mentioned that as a symptom, I remember that on two occasions there was reported to me a violent agitation and palpitation of the heart coming on from apparently insufficient cause. Those are the only symptoms of the disease present in that case, and yet it may be a masked case of exophthalmic goitre. It is extremely interesting, as it presents the hacking cough, the nervous instability, and Stellwag's sign at times. The voice of this patient is not altered, so far as I can detect. The influence of organic heart disease upon exophthalmic goitre is considerable, and I would like to ask Dr. Quine if, in his cases that went to the mountains, there was organic heart disease?

Dr. Quine:

No, there is no organic disease of the heart in either of the cases, and in one I am able to say there is not even an anæmic murmur.

Dr. Johnson:

Exophthalmia sometimes subsides very markedly, sometimes it remains. I think it is in the long standing cases that it is more likely to remain. I have a case—a woman—who, at forty-four, suddenly had cessation of the menses. I saw her for the first time twelve years afterwards, and up to that time she had been well. The menses became suppressed without cause, so far as she knows, and there developed a goitre so enormous that it pressed upon the trachea and interfered with respiration; there was exophthalmos principally of the right eye. Later she became asthmatic and came to the hospital for relief of the asthma, which was quite pronounced, and there was a chronic bronchitis, with pulmonary vascular emphysema. At the time she was admitted she had a rapid heart; she had a very slight tremor and a slight goitre, which was hard rather than elastic. There was a somewhat dilated heart and heart murmur, also a persistent exophthalmos of the right eye, with external strabismus and divergence. I have seen tremors only of the hand, tongue and forearm. I have never seen tremors of the legs, except in cases somewhat choreic. I have never seen tremors of the orbital or other muscles of the head, except the tongue.

As to the disappearance of exophthalmos in the early stages of the disease, according to the views of some writers, in the early stage exophthalmos can be obliterated by pressure; after that time it is due chiefly, if not entirely, to the fullness of the vessels of the orbit. The use of digitalis and strophanthus in the early stage of exophthalmic goitre, I think, is often disappointing. The cardiac sedatives are followed by good results finally. The variable condition of the pulse, from 120 to 80 in the standing and recumbent postures, has often been observed, and is the result of rest;

the pulse is increased by external influences, by muscular effort. In the treatment of this disease it it very interesting to know the marked effects of quinine upon the heart's action, at least in some cases. The case mentioned by Dr. Hektoen was very interesting to me because it pointed rather to the thymus as the original cause of the goitre, exophthalmia and other symptoms. This observation strengthens the position of those who have observed the enlargement of the thymus gland. The fact that extirpation of the thyroid has been followed by such very prompt and, so far as present reports can substantiate it, permanent relief of the goitre, shows some relation between the thyroid and thymus gland.

A FEW CONSIDERATIONS ON THE SUBJECT OF CHOREA.

BY J. A. BAUGHMAN, M.S., M.D., NEOGA, ILL.

We, who are prone to boast so much of the progress of modern medical science, were, no doubt, a little chagrined upon finding that he of the polished stone age, centuries before the building of the great pyramids, frequently and with success practiced trephining of the skull. In the light of this fact, no subject should be so time-worn or overburdened with literature, as to be of no interest to us in modern methods of medical investigation.

Our eagerness for prophylaxis, more rapid cures and better diagnosis, induces us to classify and generalize the great mass of written matter upon so common a subject as chorea. As Americans it may especially concern us to discuss a disease so sympathetic with our manners of living. The great tension under which our people are laboring, industrially, politically and socially, is stamping them as the thin-blooded, restless, nervous American. One erudite penman has even accused us of creating a new disease—neurasthenia.

Closely associated to this is chorea, which is yet generally classed with the fast diminishing list of functional diseases.

The symptoms of this disease scarcely need mentioning in this assembly. It is the therapeutics and more especially etiology of the affection that occupy the mind of the profession to-day, and upon these points there are yet wide differences of opinion.

More than a score of causes of the disease are brought

forward and defended by men in different parts of the world. Koch thinks it is not a neurosis, but due to a specific virus of an infectious nature. Last year a prominent Frenchman associated the staphylococcus aureus and albus with chorea in the relation of cause and effect.

It, probably, was only a coincidence. Good men yet consider the cause as emboli in the cerebral arteries. Lyman of our own society classifies the affection under functional diseases of the brain, and states, no doubt truthfully, that it is purely a functional disease.

I ascertained by writing to about thirty, that the physicians of our own state generally think of the disease as neurosis; yet a few did not commit themselves on the subject. Though looking upon it as a neurosis, nearly all of them incidentally mention rheumatism as a possible cause.

Though the association of chorea and rheumatism was first recognized many years ago, an absolute relation of cause and effect has never been established. Lewis of Philadelphia, in a paper read before the Association of American Physicians, held in Washington last May, spoke of the interdependence of chorea and rheumatism, which was commented upon by Mitchell, Jacobi, Lyman and others.

The assertion that the virus of chorea and rheumatism is identical will, no doubt, be influenced by the fact that curative remedies of the former disease often have no effect whatever upon the latter.

The literature of the last few years is very well agreed on some points connected with the disease, viz.:

That females are more liable to the disease in the proportion of two to one.

That the negro race is not quite but largely exempt from the disease.

That relapses occur in about forty-five per cent. of cases.

That the disease shows a predilection for certain months of the year in the United States. This, however, is denied by Gowers as the case in England.

That no age is exempt; but from five years to puberty it is most common.

That the mental faculties in most cases are considerably impaired.

That the temperature of the body is unchanged.

That it may affect only one side of the body, most frequently the left side.

And that there may be an hereditary predisposition to the disease, in which case it is incurable.

One of the points on which there is a difference of opinion is the electric excitability of the nerves. In two text-books issued within the last year and a half in this country, there are opposite statements upon this point. This, at first, may seem unimportant in studying the etiology of the disease, but when we remember the great similarity between electric and nerve force—indeed, some believe them identical—the electric reaction of the nerves is by no means to be overlooked. That the organized body with its chemical changes is a great battery which creates and discharges nerve force is almost a self evident truth.

In the electric paraphernalia of our offices, we must thoroughly understand the electro-motive force, intensity and constancy of our current, and the resistance which it encounters. These are facts we so seldom heed in the study of nervous diseases. In our materialistic age we rush madly on to the fray with those powerful weapons, the scalpel, the test tube and microscope, forgetting that the very science we are creating is but the production of a higher science, that of the mental and vital operations, which are so intimately associated with tissue metamorphosis that without their relation we have no life. The mind and body have been evolved together and should be a mutual fit.

The physical environments and mental facts cannot properly be studied apart from one another. To understand the nerve as a recipient of centrifugal impressions and as a conductor of force; and to understand the impression itself, is of

the utmost importance in the study of such a disease as chorea. That the disease is often due to an intoxication of the centers of cordination seems probable from the many diverse signs we meet; yet the cordinate center need not necessarily be the affected area. Is it not possible that the conductivity of the axis cylinder is diminished or that the insulation has undergone a chemical change, which interferes with the transmission of the motor impulse? Chlorosis is so common in chorea as to suggest that the whole nervous system lacks some important element, probably oxygen.

The derangement is not necessarily in the brain, as a division of the cord is not followed by a cessation of bodily contortions. The fibres of the peripheral nerve trunks are liable to degenerations independent of lesions of the cerebro-spinal axis; and these changes may exist in chorea, thus interfering with force discharge and transmission; giving an uneven current, such as we have in a defective Faradic machine.

Thus the relations of the mental and motor energies are broken. They no longer go hand in hand; the motor units being irregularly discharged or transmitted in spite of the mental rheostat.

The molecular waves of force have no controlling influence, and, if they coincide the intensity of their effect is increased; but if they stumble over one another, self neutralization and inhibition take place, all objectively manifested in the abnormal rhythm of muscular action.

Chorea from fright is, perhaps, best explained in this manner, the great mental shock replacing for a time, or interfering with the rheostatic action of the mind. This irregular discharge need not depend on macro- or microscopical lesions. The changes, probably, are as wholly beyond detection as they are in neurasthenia. Just why some metals are better conductors of electricity than others is not fully known; no more do we know why one person is of a neurotic and another of a phlegmatic temperament, unless that subtle rela-

tion of mind and matter, that current controller of the human body, is different in the two individuals in the chemical part of its constitution.

A disease dependent upon such a derangement would certainly be deemed a functional one.

A case of chorea with one peculiar feature came under my observation within the year. It was a strong, rosy, unmarried lady of twenty years. The exciting cause seemed to be grief. The muscular spasms came at regular intervals, about four per minute, and affected nearly all of the voluntary muscles of the body. As regular as clockwork a violent muscular spasm, of only an instant's duration, shot through the body. The reflexes were normal and the patient felt perfectly well otherwise. There was an hereditary taint, a cousin or two having suffered from incurable chorea. To me the peculiar feature was, that by firm pressure on the first dorsal nerve of the right side, where the nerve passes over the spine of the scapula, the spasm could for a time be wholly suppressed, and at all times greatly ameliorated. I discovered this only by accident. No anatomical changes could be seen at this point. Under heavy doses of antipyrin recovery took place in about one week. Will some one explain why pressure on the point indicated above arrested the spasms or whether I was mistaken in my diagnosis?

Sinkler gives a very interesting paper in the Medical Record on hereditary or Huntington's chorea, in which he reports and re-reports a number of cases, carefully showing the hereditary tendency of the disease. He admits the pathology to be still unknown, but thinks it probably due to developmental defects. He calls attention to the fact that mental deterioration occurs in most cases, many of them landing in the insane asylum.

He concludes that there are two varieties of this form of the disease, the division depending upon the time of mental degradation. Many other papers, meritorious and common-

place, have been written during the year on chorea, offering nothing especially new on the subject.

Although chorea tends towards a spontaneous recovery, many cases are troublesome and even incurable, hence demand the best skill and care of every conscientious practitioner. The treatment of the disease in the last three or four years has undergone a considerable variation. Starr says the neurotic element, perhaps, is the one requiring attention. All peripheral irritations, such as intestinal worms, undue excitement, etc., must be removed.

The condition of the blood is one of the prime factors in the treatment of chorea, hence the universal use of iron and arsenic. While these are perhaps our most valuable remedies, arsenic is not an ideal one. But a short time ago the Lancet reported a frightful case of pigmentation of the skin, and paralysis, from the administration of this drug in chorea.

However wonderful the results of this remedy alone, we will hardly assume its power to remove cerebral emboli, neutralizing the rheumatic virus or changing the specific gravity of the optic thalamus, all accidental conditions that have been thought causative in chorea.

Antipyrin is rapidly coming to the front as a very valuable drug in chorea. The French are using it extensively and give very gratifying reports as to its efficacy.

Personally in a few cases I have found it very efficient even with its doubtful action upon the red blood corpuscles.

It is used in doses of from fifteen to sixty grains per day associated with the same amount of sodium bicarbonate.

It often gives very rapid results. Sée recommends a combination of antipyrin and arsenic.

Electricity is recommended by a few, but the great majority of clinicians find it of little or no value. In rheumatic subjects the salicyeates, or oil of wintergreen should always be combined with the other remedies. It is very interesting to note that hypnotism or commanding the patient to remain quiet has been successful in treating chorea, within the

past year. What a wide range for speculation this fact gives to the deductive mind!

Is it not an excellent illustration of the possibility that the choreic movements are a direct outcome of those delicate, subtle changes, of which we know so little, under the direct control of the will.

Luys claims to cure these cases by means of revolving mirrors, which exert an influence only through the channels of the mind. He also claims that these cases are the most common ones we meet. It is not generally known—at least not practiced—that prolonged sleep in cases of chorea gives the happiest of results. Joffray recommends for the induction of sleep in these cases, chloral hydrate.

DISCUSSION.

Dr. W. J. Eddy, Shelbyville:

The paper that has just been read is one that gives room for a great deal of thought to some of us who are not neurologists, and one that we need to study carefully. The subject of chorea is coming up constantly before us every few days in our private practice, and we have not the means at our command, frequently, to deal with cases of that kind as they can be dealt with in hospitals or sanitariums for the control of diseases of the nervous system. The medical profession is still at sea, to a great extent, in regard to chorea; there are so many conflicting reports and statements. Nothing is definitely settled as to what is the cause of chorea, and often our brightest minds differ, picking up theories and following them out for a time, and then discarding them. We have instances of that, where in the last ten years there have been numerous changes made by different men.

In regard to the origin of the trouble, the latest researches, I think, give it that it is due to some exciting cause. We never have a case of chorea without some exciting cause, something that brings on the disease, and we may look for this cause in some irritation separate or away from the nerve centers. Among the latter researches brought out, eye-strain seems to be one of the main things causing chorea. I have had six or eight cases in which chorea was controlled and prevented by correction of errors of refraction, and two cases in which the correction of the muscular anomalous relieved the chorea. Stevens, in the paper, reports 118

cases of chorea in which some defect or some strain on the eye was the cause of every one, and the relief of this condition cured the chorea. Ranney, in the article, gives an instance of a case of chorea that was hereditary and pronounced incurable by a number of neurologists, which had run thirty-two years, and with simple correction of irregularity of the muscles of the eye controlled the case, and made a permanent and lasting cure. So with all these conditions before us, not only of the eye, but we frequently find cases where a carious tooth will produce an irritation which brings on chorea. The nerve force, as was stated, is not only carried to the nerve center that that particular nerve leads to, but it is distributed out over the various nerves; it is an irritation of one nerve, or the reflex irritation in those cases that caused it.

In regard to the pathology of these cases we have not very much to report. I think it was Gray, of New York, who gives a report of five cases in which he found a parenchymatous condition in portions of the gray matter of the brain, and in summing up his conclusions he thinks the chorea was due to the inflammatory or syphilitic condition; so we have a distinct cause in his cases. As regards rheumatism, some have spoken of that as being the prime factor, or leading cause. It may be taken as a factor. Anything that destroys and breaks down the system may be regarded as helping to produce chorea. Whatever reduces the power of the nerve centers in their vitality, or prevents their controling nerve action, may produce chorea — rheumatism, tuberculosis, anæmia, any of the constitutional forms of trouble that break down the system. So, in looking at chorea, we must look at it only as a symptom; and I think we will yet see the time when chorea will simply be put down as a symptom of one of the diseases giving the cause. One reason, I think, is in regard to the recurrence of the disease when treated by the ordinary methods, as iron, arsenic and sedatives. We can partly build up the system until it has the power of resisting these reflexes, but when something overcomes the system, we have the same trouble again. When we find something that will enable the system to resist these reflexes, we will have none of the recurrence of the disease.

MUCOUS COLITIS.

BY KATHARINE MILLER, A.M., M.D., LINCOLN, ILL.

That mucous colitis is a comparatively rare disease is perhaps sufficiently shown by the fact that few of our writers on practice have mentioned it as a distinct group of pathological symptoms. Osler gives a few paragraphs to its consideration and refers to the careful description given by J. J. Woodward in the Medical History of the War of the Rebellion, Second Section, Medical Volume, where the condition is clearly differentiated from other forms of bowel disease, and its bibliography, down to 1879, very fully given.

Its rarity, rather than any special feature of these cases, leads me to record the following study of two typical cases, now under my care: In September, 1892, I was called to see Mrs. W., aged 35, medium height, rather slender, mother of five children — youngest aged three. For a year she had been failing; had a cough, severe soreness in abdomen, great annoyance from heart palpitation, constant eructation of food and gases, much gas in bowels, menses had been absent three months and scanty even before that, and she had felt "motion" for six or eight weeks, but menstruation had occurred two weeks before I saw her, when remedies had been used to prevent abortion(?) Her weakness was so great that no accurate examination of the lungs was attempted, as the symptoms there were not urgent. Vaginal examination showed a very sensitive uterus, crowding down on the rectum. It was, however, so slightly enlarged that any pregnancy of more than six weeks was out of the question. So distinct had "motion" seemed that Mrs. W. received my diagnosis with incredulity when I told her the sensation was due to

sensitiveness of the peritoneum about the uterus. Much tenderness was felt all along the spine, and a severe burning was often felt radiating from the region of the attachment of the mesocolon, at times all over the body, and so severe in hands and feet as to be almost unendurable. The bowels were habitually constipated, and fæces in small, hard, dry masses. There was considerable rectal irritation and slight fissure of the anus. The bladder was irritable, urine scanty and highly colored.

I found that Mrs. W. had never cared for animal food of any kind. She was of nervous temperament and a very careful and rather anxious mother, considering the comfort of every one about her before her own. Her diet had been for years practically, if not theoretically, vegetarian, so that while her nervous and muscular systems had been almost constantly overtaxed with family cares, her digestive system had had continually to manufacture supplies of strength from material least easily assimilable. Having satisfied myself that heart trouble was not organic, I instituted proper local treatment for the uterus, only the gentlest measures being feasible. Soon improvement began and the "motion" gradually ceased. The bowels were regulated by mild laxatives, and the diet limited to animal food, free from fat, with a small amount of cracker or well browned toast of home-made white bread. The stomach was to be cleansed an hour before each meal by drinking at least a half pint of hot water with a little salt or soda, and pepsin with hydrochloric acid was taken with meals, with other medicines to relieve symptoms, as required. Improvement was steady. The rectal trouble had become trivial and tongue had cleaned; sleep was better, burning less, and menses had become regular and painless, though scanty; cough entirely gone.

Unfortunately, my patient was very fond of graham bread, and a friend bringing her some fresh baked and well sweetened, though not perfectly "light," she ventured to eat a few mouthfuls. At once severe stomach and heart disturbance

followed, and a few hours later the bowels were so affected that at my next visit it was reported that there was much mucus in the passages, and when next the bowels were freely moved a mass of strings and flakes of thick, fleshy substance, speckled with black, passed away. Examination of this showed it to be a mass one-eighth of an inch or more in thickness, like the cast of a bowel. These masses were soluble to a great extent in liquor-potas. but insoluble in acetic acid. And later in the history, similar specimens, kindly examined for me by Dr. Whitley of our Society, showed microscopically almost entire absence of epithelial elements with an immense number of bacteria, not, however, of pathogenic significance. There was great tenderness over the whole abdomen, but worst over the transverse and descending colon. At times evacuations occurred composed entirely of this yellowish or gray opaque material, recalling that a friend, acting as nurse earlier in Mrs. W.'s illness, had once remarked that there seemed to be dead worms in her passages. A gill of this would pass at once, seeming, when partially dry, almost like a real mucous membrane. Copious injections of warm water, with zinc sulphate, one grm. to the litre, and later two to four grms. of boric acid to the litre, were used twice a day. For about ten days every injection brought away more or less of this mucous exfoliation. Then it only occasionally occurred for a week longer, when only masses of clear mucus appeared, and the injection was used but once a day, with a teaspoonful of salt instead of boric acid. No medicine was given regularly internally, except pepsin with meals, which were strictly limited to animal food, and but little else than lean beef was taken. When burning became troublesome, brom. of sod. and potas., with tincture of gelsem., was taken as needed.

The splenetic flexure of the colon remained tender after all other tenderness had disappeared. The stomach became slightly deranged and appetite poor. The hydrochlo. acid, which had been intermitted) was resumed, and pancreat., .25 grm. with sod. bicarb. .75 grm), given one hour after eating.

The hot water before meals was continued, and on the slightest evidence of sour stomach a half pint of hot water with a grm. of sod. bicarb. was taken.

These measures seemed completely successful. Only occasionally were slight signs of clear mucus noticed in the fæces or following injections, when it happened that to avoid inconveniencing the cook, Mrs. W. ate, instead of beefsteak for breakfast, a soft-boiled egg and a slice of toast (egg had been taken without disturbance), within twenty-four hours the gases in the bowels, and opaque shreds of mucus accompanying the passages, showed that an irritant had been taken though the general symptoms were much less severe than before. It became necessary again to interdict all food except beef and mutton, and as stomach digestion seemed rather weak, papoid was substituted for pancreat.

Recently Mrs. W. had so far improved as to be able to sit up for an hour once or twice daily, and even stood up, trying to learn to walk again. These efforts reacted on digestion, and together with the use of milk (a mistake of my own), with slight malarial disturbance, precipitated a relapse. I at once ordered return to the exclusive meat diet, prepared by repeated grinding in a sausage grinder, so as to be free from all indigestible portions, and easily eaten, with only hot water in large doses as a beverage. And after some vicissitudes, not connected with the chronic troubles, Mrs. W. is again free from the symptoms of mucous colitis, has dispensed with the injections, and is steadily improving in general condition.

The modus occurrendi of the earlier attack I believe to have been as follows: Having lived habitually on foods poor in protein, and with nerve force diverted from digestive functions, much fermentation had taken place in the starchy food eaten, and the whole system had become surcharged with its products. The bowels had become measurably free from these when the imperfectly prepared, and to her absolutely indigestible, morsel of fresh bread was eaten. It promptly fermented, and the products of fermentation passing along

the bowel acted as a yeast in the development of additional fermentation in all the bowel contents. The bowels—previously irritated, and secreting too much mucus, and now with nerve elements almost paralyzed by the poisonous materials near them—poured out great quantities of mucus, which was partially coagulated by the acids in contact with it, and, becoming dislodged from the surface of the mucous membrane, passed away as described. Under healing and cleansing applications, and unfermentable diet, improvement followed, only to be again checked by the ingestion of less digestible food which the small intestines, with their abnormally acting secreting cells, could not digest, and again the whole intestinal tract was irritated by the resulting fermentation. Thus could attack after attack be provoked by the least variation from a diet which strictly avoided fermentable substances, and only included materials practically entirely digested in the stomach whose condition could be controlled.

Writers have noted the connection of nervous exhaustion with this disease. Many of us are perhaps prone to underestimate the nerve force required to make blood and muscle from potatoes and bread; to turn garden vegetables into brain and brawn; yet this must be great, and it is easy to see how protracted diversion of nerve force in other directions, and consequent nerve exhaustion, may render such metamorphosis absolutely beyond the powers of the digestive system. This too would readily account for the fact, occasionally noted, that any nervous excitement may, in a predisposed person, produce this particular form of disease.

In this connection, a recent case of mine is illustrative: A lady aged thirty-eight years, having uterine prolapse and retroversion, with constipation, was progressing nicely toward recovery when her son was severely injured. Additional work for her and considerable anxiety resulted. She noticed some soreness in the left iliac region, apparently in the bowel. Two weeks later her son, nearly recovered from his hurt, was suddenly seized with severe pain in the region of the heart,

and for a time his life seemed threatened. Of course, the mother's anxiety was intense for several hours. The next morning, on using an injection to move the bowels, she noticed, at the place where tenderness had been, there seemed an obstruction to the upward flow of the water and a giving way with decided pain, when the water passed up freely, and on return brought with it a considerable quantity of shreds and masses of opaque appearance which, at my visit that day, I discovered to be the characteristic discharges of mucous colitis. This lady's diet also has been habitually almost entirely vegetable, and the uterine disease has kept her nervous system for years in a somewhat deranged condition.

Nowhere have I found so full an attempt at formulating the etiology of this disease as in the work of J. H. Salisbury on "The Relation of Alimentation and Disease." Unfortunately, Dr. Salisbury has so burdened his reports with technical inaccuracies of expression, anatomical and otherwise, and so padded his volume with repetitions, that his conclusions carry less weight in perusal than they perhaps deserve. They may be summed up briefly thus : The normal person, at least of the races inhabiting the temperate regions of the earth, requires and digests well a diet two-thirds animal and one-third vegetable. The animal food, except fats, is digested in the stomach, whose condition as to acidity, fermentation of contents, etc., is to a great degree under control ; when the digestive balances have been seriously disturbed by excessive use of vegetable food, always indigestible in the stomach, and often fermenting there before entering the intestine, the whole system gradually becomes surcharged with products of fermentation, and only by a long continued abstinence from all easily fermentable food, and close adherence to a diet of pure protein, digestible in the stomach, with attention to free excretion, can these unhealthy elements be eliminated and substituted by normal cells, both within the bowels and throughout the whole body, and until this occurs, a slight disturbance of

digestion, either by ingestion of fermentable food, or by diversion of nerve force, may induce the conditions of mucous colitis. It is interesting here to note that G. M. Beard arrives at the same conclusions as to the proper diet for nervous persons, though drawing them from different premises. If the premises are correct, the treatment certainly is rational, and only clinical observations can decide what may be expected in many seemingly hopeless cases of chronic and extensive disturbance of nutrition.

While the general result is still imperfect in the cases related, their study has been so interesting, and the present results so encouraging to me, that I venture to present them, incomplete as they are.

STATE CARE FOR EPILEPTICS.

BY J. B. MAXWELL, B.S., M.D., MOUNT CARMEL, ILL.

In the beginning of my practice my attention was called to the condition of epileptics in the Wabash County poorhouse, where I made frequent visits as county physician. Here they did much of the work of the farm, and as their cases had become to be considered hopeless, they received no especial care and no effort was made at their cure. I saw that if their work were judicially utilized it would go far toward making them self-supporting. At first I looked upon the matter from a financial standpoint only; but as I saw more of them and their utter hopelessness, my sympathy was aroused. I began to look into the matter. I found that something had been done for the care and improvement of almost every defective class—for the insane, for the criminal insane, for the deaf and dumb and blind, for the sick and crippled, for young criminals and reformatories, and for the old and disabled veterans; but the sufferer from epilepsy had been left to shift for himself, often an outcast from his family, usually expelled from the schools, denied industrial employment, shunned by his fellows to a great extent, left to grow up in ignorance and in idleness, companionless and friendless, a prey to one of the most dreadful and hopeless of maladies, refused admission to general hospitals and only at last allowed a place in a poorhouse or in an insane asylum.

The object of this paper is to arouse the medical profession of the great State of Illinois and to call their attention to what they must admit to be a great wrong, and if possible to set upon foot some plan by which it may be righted.

The question of separate provision for epileptic patients deserves, therefore, at our hands particular consideration; since from the peculiar nature of the disease it involves not only their treatment by skilled experts, but also their education for the ordinary pursuits of life. Epilepsy is a remarkable malady. It robs the victim of his mental and physical powers for a comparatively small period of time, sometimes but for a few minutes in a week or month. It is not a continuous disease and terrible as are the few moments of fainting and spasm that come upon the sufferer unexpectedly, they do not necessarily incapacitate him for all the duties and pleasures of life. When we take into consideration the fact that a large majority of these unfortunates are gifted with as much intelligence as ordinary human beings, that they are as capable of education, as well adapted to every-day pursuits, quite as able to be self-supporting as most people, the unutterable woes of this class become apparent. The sufferer may not be especially set apart from his fellows in childhood or youth, but the moment he applies for work and his malady becomes known, at once a sharp line is drawn. Be he ever so intelligent or industrious, this constantly stands as a black mark against his name. His presence is only tolerated. He is got rid of at the earliest possible moment, and the difficulty of getting other work increases in a geometrical ratio, till presently he is relegated to the lumber heap of incompetents, or he becomes a hopeless pauper. Every physician, and almost every person, has observed some such sad history. The only wonder is that so little stir has been made in behalf of these poor unfortunates. Then again they are often, if not always, very sensitive to their condition. In the intervals between paroxysms, which are usually periodical, the epileptic is in the full possession of all his faculties, his mind is clear, he appreciates the love and sympathy of friends and of home, has the keenest perception of his wretchedness and looks forward with great dread to the return of his malady. To condemn a broken-hearted man or woman under such circum-

stances to a dungeon, or to the society of the criminal or profligate is a great wrong, which a Christian state may well make haste to remedy. Something ought to be done for these sufferers, who from the fact that they are fully conscious of their wretchedness seem to have peculiar claim upon our sympathy and care. Thus far I have spoken only of the welfare of the patients and their freedom from suffering, but it must also be considered from the standpoint of the welfare of the public. Many epileptics are dangerous both to themselves and to others. I do not here mean those that are insane and can be legally restrained. I mean to include those epileptics who are subject to frequent severe attacks, but who in the intervals between these attacks are in a condition of comparative sanity.

Many of these present what has been termed post-epileptic conditions, that is, abnormal conditions following the convulsion, and it is in these conditions that non-insane epileptics become extremely dangerous.

Such a person may attack, assault, rob or murder. The thing to be done here is to place these epileptics in a position where they can neither harm themselves nor others. This is only justice to the patients themselves; for their own sake, they should be prevented from committing crimes even unconsciously. According to well established statistics there are two epileptics for every thousand of population. Then in the State of Illinois there are to-day between six and seven thousand sufferers from this disorder.

Of course there are many whose convulsive attacks constitute the entire disease, that is to say, those whose intelligence has not been affected by the disease and who are perfectly able to take care of themselves. Then there are those who just before or just after an attack are subject to mental derangement, paroxysms of cerebral excitement or depression, during which they are prone to do deeds of violence, but who during the intervals are normal. A third class are mentally abnormal, and this is permanent. All these classes would

receive benefit from a proper state institution; but it is especially for the poor and friendless and helpless of these classes that I plead,—he who is confined in the poorhouses, jails and wretched homes. Many of these dependents properly treated and cared for at the right time, might have been restored and made productive citizens instead of a burden upon society. An institution to accomplish the purposes, must possess many unusual features. There have been suggested three plans. First, special colonies for epileptics; second, special hospitals for them, and third, special wards in existing insane asylums. It has been shown that the latter plan is impracticable, in that the insane hospitals are now over-crowded. Then the association of the two classes in the same institution exerts a deleterious influence on both classes. Further the epileptics are not insane and ought not be so classed; and their treatment is so vastly different that it ought to devolve upon a specialist in that line. The hospital plan is just as impracticable. Epileptics, who are only slight sufferers, will not stay without occupation and systematic employment, and those who have marked mental disturbance cannot be kept there.

The creation of special epileptic colonies is the plan that has found most favor among those best able to judge of the epileptic's needs, and this is the plan that Illinois ought to adopt without further delay. This is not a new scheme of a disordered mind, but one that is perfectly practical and eminently necessary. Something has been done already in the United States and much in Europe. Dr. Frederick Peterson observed the deleterious effects upon both classes by their confinement together in the Hudson River State Hospital, New York. He went abroad in 1886 to study the hospitals and asylums of the old world. At Beilefield, Hanover, Germany, he visited a colony for epileptics founded some twenty-six years ago, by a Lutheran clergyman, Pastor von Bodelschwingh. This seemed to him to be an ideal institution and on his return he published an account of it, and from

that day to this he has worked unceasingly, in season and out of season for something similar in his own state. He has discussed the question so thoroughly and so ably that there really seems to be nothing new to say upon the subject. His efforts are being crowned with success, and New York has passed a law for the establishment of a similar colony; a site has been selected and it will only be a short time before the colony is in successful operation. But a few words in regard to the German colony, and they shall be in Dr. Peterson's own words. He says: "For nobility of conception and for excellence of result, it is unique in our civilization. It seemed to its benevolent founder that it was possible to create a refuge where such sufferers could be cured, if curable; where their disease might be ameliorated and their intellectual decay prevented; where they might find a comfortable home, if recovery were impossible; where they might develop their mental faculties to the utmost; might acquire trades or engage in any occupation they saw fit to choose; finally, to grow into a community of educated, useful, industrious, prosperous and contented citizens. There has been a complete realization of this project. There has been a gradual evolution and expansion of the colony, until now it has over one thousand inhabitants. When I visited it in 1887, it consisted of fifty-five houses and cottages, scattered in pretty gardens over some three hundred and twenty acres of beautiful woodland and meadow. It was like a country village. Here schools are to be found in which instruction is given in all branches usually taught in ordinary public schools, and opportunities are afforded for even higher studies in the languages, arts and sciences for those who desire them. Here are stores and shops of many kinds, such as a seed store, grocery, drugstore, joinery, bakery, tailor shop, paint shop, blacksmith shop, foundry, tinshop, shoeshop, saddlery, dairy, brickyard, printing office and book bindery. Floriculture, agriculture and fruit raising require large numbers of epileptic employees. Some of the houses have been planned by epileptic

architects, the brick made by sixty epileptic patients at the brick-kiln, the masonry done by epileptic workmen, the woodwork made by their carpenters, the iron work by their own smiths, the painting, glazing and furnishing by their own adepts in these various trades. For men alone, there are over thirty different callings. The women are busied with the manifold cares of the household, manufacture of wearing and bed linen, and the rearing of flowers and garden produce. Thus it will be seen how nobly philanthropic has been the conception and carrying out of this project. And it is not only in the multiplicity of occupations that the genius of its conceiver has been made manifest, but also in all those avocations that tend to divert the minds of the patients from the contemplation of their misfortune. Games and amusements are many; out-of-door sports, evening entertainments, singing schools, a museum, etc., etc.,—all have been thought out for the perfect evolution of this little social world."

In Ohio the subject has been agitated almost constantly for some years, and now there has been established an institution at Gallipolis. There the buildings are on the cottage plan, each to accommodate fifty patients. Five cottages are completed and contracts for fifteen more are awarded and the work is being rapidly pushed. The Board of Trustees of this institution in one of their late reports say, "The importance of the separate care of the epileptic classes is becoming greater every year, and the reasons for such benevolence are becoming more apparent every day. Inquiries have been received from all parts of the country—including twenty-seven of the states of the Union—in regard to the Ohio Hospital for Epileptics, the plans thereof, the number to be accommodated, the manner of treatment, method of government, etc., etc., and accompanying these inquiries are strong words of commendation to Ohio for the steps she has taken in advance in the great enterprise for the amelioration of suffering humanity. It is apparent that the example of Ohio will be

generally followed throughout the Union. We also record the fact that inquiries have been received from persons resident in other states asking admission for patients, who are not citizens of Ohio, and inquiring whether such may be received on condition of compensation being given."

This subject has been brought up in Massachusetts by Dr. W. M. Bullard, of Boston, and presented to the legislature at its late session. It failed of passage because it was necessary to provide for the chronic insane, and it was not possible to pass two bills involving large expenditures of money for somewhat similar institutions at the same session. Dr. Bullard writes me that the bill will be taken up at the next session of the legislature with fair prospects of passage. Dr. Theodore Diller, of Pittsburg, and Dr. J. Madison Taylor, of Philadelphia, are enthusiastic advocates of the same course in Pennsylvania.

Dr. George M. Gould, editor of the Medical News, says, "The only difficulty in speaking of this matter, is not to say too much, or to speak in a manner not to seem exaggeration. That systematic methods should be pursued in caring for epileptics needs no further demonstration." And further upon the same subject, "If only the earnest workers in practical medicine throughout the United States—those conscientiously striving to limit the woes of their fellow-men—would give this reform their attention and active support, practical results would infallibly follow. It seems a subject eminently proper and worthy of being considered by medical associations."

I have by correspondence and by personal interview sought the opinion of many eminent medical men and have yet to meet one who opposes the plan herein advocated. Some think, however, that the legislature will be slow to act in the matter. Lately I have canvassed a number of the members of the present legislature and I find them more favorable than I had expected. Nothing could be done at this session, even if we were ready to ask it, for reasons best

known to politicians—a desire on the part of the party now in power to make an economy record. At the next session conditions may be very much changed. I hope something will be done by this society to get the matter started.

DISCUSSION.

Dr. D. R. Brower, Chicago:

For one, I am exceedingly indebted to Dr. Maxwell for bringing this very important topic before us. It is a fact that we must recognize that those unfortunate people have been sadly neglected in our efforts to take care of the vast number of dependent people who happen to be in this community. I think there are two reasons why the scheme the doctor proposes, should meet with our cordial and earnest endorsement. The first reason concerns each individual and every member of the community, that many of those epileptics during the epileptic status, before and after these convulsive seizures, are really dangerous to the community, but for many weeks, or possibly, many months, may be just as law abiding citizens as you and I are. To associate such patients with the ordinary insane, is doing them gross injustice, as it is doing the insane gross injustice. I think those who have had experience with the insane will bear me out, that it is exceedingly bad for them both.

Another reason is this: I believe if we could place these epileptics where they would be encompassed with the most perfect hygienic surroundings, that a reasonable proportion of them could be cured. This, I think, must be manifest to every physician in this room. To undertake to treat these patients, as we are often obliged to do, by drugs and with imperfectly carried out hygienic regulations, and the result is usually an absolute failure. I have been in the habit of picking out such patients as I could, and placing them in hospitals. I send patients to St. Joseph Hospital, in this city. I have a case at the hospital now, a young girl. This is the third time she has been there. I know as long as she stays there she will have no convulsions. When she has been previously discharged, as soon as she goes home and enters upon unhygienic surroundings and neglects the dietetic provisions, she has a return of the convulsions; but, I believe, that if I can keep this girl at the hospital long enough, I can succeed in curing her disease. What is true in her case is so of many others. The mere administration of pharmaceutical preparations is not sufficient, and it is only by providing such colonies as Dr. Maxwell proposes that

we can protect the community first, and in the second place do our duty to these, I should say, most unfortunate of sick people.

Just at this particular time, I am free to confess that I am somewhat opposed to creating another political machine. I do not know whether this is the proper place to bring that matter up or not, but I think the present status of our great institutions — our hospitals for the insane, institutions for feeble-minded children, deaf and dumb institutions, converted as they have been in an outrageous manner into political machines, instead of scientific institutions, is an outrage not only upon the medical men, but upon every person in this State, and it seems to me this society should rouse itself for the moment, leave its scientific work, and demand that the present method of making political engines out of what ought to be scientific institutions should stop.

I do not know how much to do towards assisting in having the State take care of these people. While I know that some such way as the doctor proposes should be made, there should be some way by which these people should be gathered together; and if this is done at all, it must be done by the power and influence of physicians.

ALCOHOL: ITS PHYSIOLOGICAL ACTION.

BY GEORGE W. WEBSTER, M.D., NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, CHICAGO.

This is a vexed ground, a debatable land where various views are in fierce conflict. This warfare is often characterized by a want of fair play, by declamation and not argument, by biased, prejudiced judgment, by sentiment instead of an earnest search for TRUTH, and where financial interests outweigh all other considerations. That there may be among you dissenters from the views promulgated is possible, but I only ask that you view and consider the action of alcohol in the same judicial spirit which should characterize your investigations and opinions of any other substance. That this is an important question is shown by the following facts: "There is expended for fermented and distilled liquors in the United States $800,000,000 annually (N. S. Davis, address before the American Medical Temperance Association, Detroit, '92). But this is not all. If it were only a question of dollars and cents, it would not be so fearful to contemplate. Listen to the evidence:

"Our highest judicial authorities and social economists attribute much more than half of all pauperism and crime to the use of alcoholic drinks (same author), while the medical profession of to-day admit that a large percentage of sickness, insanity and mortality are traceable to the same source (N. S. Davis). Cooper says (Edward C. Mann, Va. Med. Monthly, Mar., '92), "In Berlin, one-third of all the cases of insanity is caused by alcohol."

The Inspector General of the prisons of Belgium says

four-fifths of all the crime and social misery is due to intemperance. In a recent report of a French asylum, out of 302 cases of insanity, 102 were attributed to drink. Prof. Schmoller, the German economist, says: "Among our working people the conditions of domestic life, of education, of prosperity, of progress, or of degeneration, are all dependent on the proportion of the income which flows down the father's throat."

"The whole condition of our lower and middle classes, one may even without exaggeration say, *future of the nation*, depends on this question."

I believe, gentlemen, that this is one of the most important topics of the times, one upon which we should have clear, concise, accurate information, and I believe that the time has fully arrived when we should refuse to allow our judgment to be biased by past superstitions, opinions or customs, present sentiments, or an endeavor to find an excuse for our own habits.

But, you inquire, What can be done? Shall we legislate? Shall we go out and proclaim that all those who are temperate shall be saved and that all those who are not shall go into eternal torment? No, gentlemen, neither of these, for we have tried legislation, but it is useless folly to have a *law* higher than *public opinion*. It will not, it *cannot* be enforced.

The teaching of temperance or abstinence in the abstract will not do. But you ask, Then what shall we do? Let me beg of you gentlemen, do one thing, endeavor to teach the people what you believe to be the *truth* and make an honest search for the truth which you purpose to present.

Try to realize fully your personal responsibility to your patient, to yourself, to the community, and to your God, and then act accordingly, and you will not go far wrong.

We are recognized by the people as the guardians of public health and it is incumbent upon us that we do our duty, "hew to the line, let the chips fall where they may."

It is because I realize this that I have chosen this topic for discussion at this time.

It is too large a field to cover in one or in many hours, and I shall therefore content myself with discussing only the following, as they are the questions which must concern us as physiologists:

(1) Its action as a stimulant, if it is one.
(2) Its action on the circulation.
(3) Its action on the digestion.
(4) Its value as a food.
(5) How does it lower temperature?

Under the first heading, let us first inquire, what is a stimulant, and then, whether alcohol belongs to this class of drugs.

A stimulant is something which is used to goad, to urge on, to excite organic action of a part, it is the whip to the horse, a force liberator. Heretofore, we have been taught, that alcohol in small doses is a stimulant, and I have so taught, although Dr. N. S. Davis has contended to the contrary these many years. Listen to other equally credible witnesses.

Sidney Ringer and Harrington Sainsbury began a series of experiments to determine the action of alcohol on the heart. They say:

"By their direct action on the cardiac tissue, this drug (alcohol) is clearly paralyzant and this appears to be the case *from the first*, no stage of increased force preceding."

Prof. Martin of the Johns Hopkins University says: Two and one-half parts of alcohol in 1,000 almost *invariably* markedly diminishes within one minute, the work done by the heart (of the dog).

Prof. H. C. Wood, than whom there is no more careful, scientific, accurate observer and correct reasoner, began a series of experiments to determine the value of alcohol as a stimulant in advanced chloroform anæsthesia. In his report to the International Congress at Berlin, 1890, he says: "In no case have I been able to detect any increase in the size of the pulse or in the arterial pressure, when the heart was fail-

ing during advanced chloroform anæsthesia." "On the other hand, on several occasions large doses apparently greatly increased the rapidity of the *fall* of the *arterial pressure.*"

Dr. E. McDonald Colgrave, after a careful, critical review of the work in his field by such men as Ridge, T. Lauder Brunton, Parks and Wollowicz, Martin, William A. Hammond, Prout, Vierondt, Herrier, Smith, Perrian and Lehmann says (Dublin Journal of Medical Sciences, '92): "Contrary to what has been and is supposed, it is found from all these researches, that small doses of alcohol, *from the first*, have a narcotic rather than a stimulating effect. All these with the exception of Smith, found that alcohol diminishes the excretion of Co_2.

All authorities are agreed that large doses lessen the strength of the heart by one-twentieth and blood pressure by one-ninth. Nothnagel explains this by its action on the centres in the heart and in the medulla, because if we cut the vagi, the heart increases again.

Bunge, Physiological Chemistry, page 139, says: "Alcohol has *invariably* a paralyzing influence. All the results which, on superficial observation, appear to show that alcohol possesses stimulant properties, can be explained on the ground that they are due to paralysis."

The following may serve to illustrate this point:

Alcohol, instead of stimulating the psychical functions, only appears to do so. It is a paralysis of judgment and reason, allowing the emotions full swing, "unhampered by the guiding strings of reason." He forgets his trouble and cares, becomes gay and communicative, and no longer clearly sees or cares for the dangers or cares of life.

The great safety valves of this human machine are pain, and weariness or fatigue.

If these be paralyzed by narcotics, it is like tying down the safety valve on the river steamboat; we get there, or blow up. The paralyzing, narcotic influence in allaying all kinds of pain, whether physical or mental, is characteristic of alcohol, and

the self complacency, light heartedness and useless gesticulations which replace the weariness and mental anguish or physical pain, mean, not increased strength, but lessened sensibility, a narcotic influence, paralysis.

Bunge further says (page 141): "The uselessness if not harmfulness of moderate doses of alcohol rests on better evidence than scientific deductions and experiments.

In connection with the sanitations of armies, thousands of experiments on large bodies of men have been made and have led to the result, in peace and in war, in every climate, in heat, cold and rain,—soldiers are better able to endure the fatigues of the most exhausting marches, when they are not allowed any alcohol at all.

A similar result is observed in the case of the navies, and on thousands of commercial vessels belonging to England and America, which put to sea without a drop of alcohol.

Most whalers are manned by total abstainers. I can do no better in summing up this first point than to quote the strong, vigorous language of Dr. N. S. Davis, when he says that "an ordinary regard for scientific accuracy, therefore, demands that it should be classed as an anæsthetic and narcotic and in no sense as a stimulant or tonic."

Little can be added to what has already been said in regard to its action on the circulation.

Dujardin Beaumetz (L. Hygiene Almintaire) says: "In the blood you bring together two bodies, one, alcohol, eager for oxygen, and the other, hæmoglobin, ready to give up oxygen under the feeblest influence, even that of an inert gas, and you imagine no changes take place between these bodies. Such change does take place. Alcohol, under the influence of the hæmoglobin, is transformed into acetic acid. A portion of the alcohol ingested undergoes combustion at the expense of the oxygen of the hæmoglobin of the blood globules. Thus the oxy-hæmoglobin is partially changed to reduced hæmoglobin.

"In larger doses, it destroys blood corpuscles and dis-

solves hæmoglobin, the quantity not oxidized acting directly on the nervous system, causing sleep and intoxication and vasco-motor dilatation, and finally pathological changes. In either small or large doses it causes vascular dilatation, thus leading to increased heat dissipation."

The only dissenting voice which I have found is that of Eagleton (Sajou's Annual, 91, V., B. 3).

This was earlier than the observations already quoted. He says that "small doses of alcohol, injected into the circulation increase cardiac force and arterial pressure."

Large doses, diminish both *at once.* I shall discuss its local action on the circulation especially of the stomach, in connection with its action on digestion.

Digestion: In considering the action of alcohol on the digestive processes, we must carefully distinguish between its effect on secretion and its influence on chemical processes.

First, then as to its influence on salivary secretion.

Sir William Roberts says (Diet and Digestion, p. 116), "Alcohol markedly increases the flow of saliva."

In regard to its influences on the chemical processes of salivary digestion, the same author (p. 132) says: "Up to 20 per cent. proof spirit, it has no retarding effect on the chemical action of ptyalin on starch."

Stomach Digestion: Here we must likewise distinguish, not only its influence upon secretion and upon chemical processes, but also upon absorption, and motility, as well as circulation, and in relation to the latter the effects of continuous use.

First, then as regards secretion, Sir William Roberts says (P. 132): "Alcohol acts as a pure stimulant to gastric digestion, causing an increased flow of gastric juice and stimulating muscular contraction." But, he says "We may *assume* that alcohol would act in this respect in the same way as it acts on the salivary secretion." There is no evidence to justify him in assuming anything of this sort.

Blumeneau (Annual, 91, Vol. V., B. 1) says: "During the first three hours gastric digestion is distinctly retarded." This is fully in accord with the views of Molalnasky (Annual, 90). This, he says, depends upon decreased proportion of Hcl. and an increased amount of lactic acid, the acidity being due almost entirely to lactic acid. The foregoing is more marked in abstainers.

Subsequently he says, "During the fourth, fifth and sixth hours, the gastric digestion becomes considerably more energetic, the maximum of Hcl. being reached five hours after the meal.

Also, "during the second stage, the gastric juice acquires a far higher digestive power." "Under the influence of alcohol, the secretion of gastric juice becomes more profuse and lasts longer than without alcohol. Gluzinski (Deutches Archiv für klimsche Medicin, Leipsig, 1892, page 423), carried on a series of careful experiments upon healthy and pathological stomachs, the stomachs being empted at stated intervals and the contents carefully examined. He says (1) that "alcohol disappears rapidly from the stomach."

2nd. The effect varied at different times.

3rd. After absorption, it stimulates secretion, causing, especially a marked increase in the acid (Hcl.?) secretion of the gastric juice, thus materially accelerating gastric digestion.

4th. "Secretion continued much longer than where alcohol was not taken, causing also, an increased amount of fluids found in the stomach."

In regard to the chemical processes, Sir William Roberts says (p. 132): "If we assume that the contents of the stomach equal two pounds, then if we add two ounces of whisky, this would only equal five per cent. of proof spirit, and this does not hamper proteid digestion," but does not say whether he means by this that it does not hamper the gastric digestion as a whole, or whether he means the action of pepsin on proteids.

It causes vascular dilatation of the stomach and, if contin-

uously used it causes congestion and ultimately chronic inflammation, and then all the functions of secretion, motility, absorption and chemical activity are impaired.

In regard to the influence of alcohol upon the motor power, and upon absorption, I can find, in the literature to which I have had access, the conclusion of but one recent observer. Blumenau (op. cit.) says that "the motor power as shown by the salol test (Ewald's test), is somewhat diminished," also that absorption as shown by iodide of potash test, is delayed. As to its action on the nervous system, I shall say but little, as this is one of the points upon which most observers are agreed. From what I have already said about its not being a stimulant in any dose and under any circumstances, except as a local stimulant, we know that it acts as a narcotic and anæsthetic, and may, under certain circumstances, within very narrow limits, be serviceable. That it causes inebriety, pathological changes in every tissue in the body, insanity, debauchery, misery, crime and poverty are matter of common observation. It lessens the acuteness of sensibility, benumbs pain, paralyzes the centers, beginning with judgment and the higher centers first, thus allowing subordinate centers to dominate, thus accounting for the change in disposition, and some of the disgusting, frightful crimes committed, while under this influence. It is a narcotic, and anæsthetic. And now a word in regard to one of the questions upon which there is much discussion—*its food value.* Dr. N. S. Davis argues that it is not a food in any dose or in any sense.

We have learned that a food is anything which, when taken into the body, is capable of replacing those substances lost from it, either with or without having undergone oxidation, if oxidizable, then at the temperature, and under the conditions existing in the body, digestable, absorbable, and its value depending on the proportion of soluble food stuff, its uninjuriousness, digestibility, etc.

Now one of the chief arguments against alcohol being a

food in any sense, is that the amount of Co_2 is not increased and the temperature *does not rise.*

In this connection we must bear in mind that there is less carbon in proportion to other constituents, and that, although sugar and fats are recognized as food, they cause neither a rise in temperature nor an increased excretion of Co_2. They simply supply the material which may be oxidized by the body, the amount depending largely upon muscular activity.

Then, too, let us not forget that there are other reasons why the temperature dees not rise. As already pointed out, it lessens cellular metabolism and also increases heat dissipation, both tending to lower the temperature.

In this connection Dujardin Beaumetz (L. Hygiene Almenture) says : "When alcohol is introduced into the body in non-intoxicating doses, it is part oxidized and transformed, first into lactic acid, and into alkaline acetates and, finally, into carbonates."

Alcohol is a food, which, instead of promoting the combustion of the tissues, retards by withdrawing a certain quantity of oxygen from the blood corpuscles. Reichert (Annual, Vol. 5, 91, B. 5), reviews some of his careful scientific experiments, using a calorimeter to determine the amount of heat given out, and arrives at the following conclusion :

1. Alcohol does not affect the total quantity of heat produced.

2. More heat is dissipated than is produced.

3. This accounts for the lowering of temperature, it being proportional to heat dissipation.

4. Alcohol by undergoing oxidation, yields some energy in the form of heat, thus conserving the tissues, and serving as a food.

CONCLUSIONS.

1. Alcohol is not a stimulant in any dose or in any sense, except in increasing the secretion of saliva and of the gastric juice.

2. It is not a stimulant to the circulating apparatus, does not

increase the strength or the work of the heart, and locally to the stomach causes vascular dilatation, congestion and inflammation, and if constantly used, in either small or large doses, it causes vascular dilatation, increases heat dissipation, lessens oxidation by robbing the corpuscles of part of their oxygen, and in large doses destroys the corpuscles by dissolving the hæmoglobin.

3. On digestion, small doses cause an increased flow of saliva and of gastric juice, and thus increase and facilitate the digestive processes. If continuously used, congestion and inflammation result, and the digestive processes are much impaired or almost destroyed.

Large doses are always injurious and put an end to the digestive processes. If alcohol be given at all, to improve digestion, it should be given in small doses just before meals. As a food it has some value, probably two ounces of alcohol undergoing oxidation in twenty-four hours, and it probably spares the proteids as it reduces their metabolism by seven per cent. Its heat value is about seven-ninths that of oil.

Even in small doses its food value is utterly subordinate to its action on the nervous system. Before a man could get a square meal, he would be dead drunk.

With alcohol and no food, death takes place as soon or sooner than if no food be taken. Large doses may produce instant death.

In disease, it has a narrow limit of usefulness, always bearing in mind its possible, yes, probable, dangers. It causes a tendency to obesity on account of the fact that it spares the proteids, limits oxidations, and allows or causes a vast accumulation of waste material in the body and blood, lessens the power of resistance to disease and directly invites others.

THE PREVENTION OF BLINDNESS DUE TO OPHTHALMIA NEONATORUM THROUGH TREATMENT AND LEGISLATION.

BY ARTHUR E. PRINCE, M.D., SPRINGFIELD, ILL.

Mr. President and Gentlemen:

Interest in the prevention of blindness due to ophthalmia neonatorum having increased during the past twenty-five years, it is my belief that a concerted effort on the part of the profession should be made to diminish the frequency of the disease and the blindness resulting therefrom. To this end I have endeavored to summarize such facts as may serve to bring the subject before the Society, in the hope that good may be ultimately accomplished.

The importance of the subject is in direct proportion to the frequency with which blindness results from the operation of this cause, and those who have given the subject no consideration are invariably surprised on learning its magnitude.

My attention was first drawn in this direction by the results of an examination of the children in the Illinois State Institution for the Education of the Blind. In this institution there were two hundred and seven pupils. With one hundred and sixteen the cause of blindness was ascertained in each case, and the results tabulated as shown below:

CAUSES.

Ophthalmia	Neonatorum	Contagious	44	116
	Purulent		38	
	Trachomatous		34	
Congenital				25
Measles				3
Meningitis				5
Sympathetic Inflammation				2

Scarlet Fever	Non-contagious	4
Scrofula		9
Smallpox		18
Traumatism		18
Unknown		22
		207

From the following tabulation of 185 cases, in which the cause could be ascertained, is indicated the percentage of blindness due to each cause:

		PERCENTAGE.	
Ophthalmia	Neonatorum	24%	62.9%
	Purulent	20.5%	
	Trachomatous	18.4%	
Congenital		13.6%	37.1%
Measles		1.6%	
Meningitis		2.7%	
Scarlet Fever		2.1%	
Scrofula		4.8%	
Small Pox		1.6%	
Sympathetic Inflammation		1%	
Traumatism		9.7%	
		100%	

As indicated, sixty-two and nine-tenths per cent. were found to be due to the three prevailing forms of communicable disease of the eye which are amenable to prophylactic measures, namely: ophthalmia neonatorum, purulent ophthalmia, of later years, and trachoma. Twenty-four per cent. were found to be due to ophthalmia neonatorum alone. Surprised at the result, I was led to look up the observations of others, and found that this was not above the average.

Magnus had shown in his extensive work, Die Blindheit, ihre entstehungund ihre Verhütung, that of children under sixteen years of age, 38.78% became blind from ophthalmia neonatorum.

Fuchs found in an examination of 3,204 cases of blindness in various parts of Europe that 23.5% were due to ophthalmia of the new born. An average of all the asylums of Germany gave 25.83%. Similarly the returns of Austria and Hungary showed an average of 20.4%. The New York State Institution for the Blind at Batavia, having 128 inmates, showed 23.4% blind from this cause.

Entire communities have been examined to determine the relative influence of the various causes of the production of blindness. In Brunswick, 28%, and in Nassau 13% were found to have lost their sight from ophthalmia neonatorum.

Fuchs estimates that at least 10% of the blind of all ages, and in all countries of Europe, are due to the operation of this one cause, making in Europe alone 30,000 blind from ophthalmia neonatorum.

Being impressed with the magnitude of the influence of this cause, three questions become of interest:

1st. What are the results of prophylactic measures?

2nd. What are the results of intelligent treatment?

3rd. What has been and should be done by legislation?

PROPHYLAXIS.

1st. The earliest available record of an effort to prevent ophthalmia neonatorum is that of Gibson in 1808. That he understood the indications is shown by his original propositions which were made three quarters of a century ago, and before the birth of our knowledge regarding antisepsis, and before the discovery of carbolic and salicylic acids. They are prophetic, concise and complete, and constitute the generalization of modern facts.

First. Control the vaginal discharges as early as possible during pregnancy.

Second. At the time of delivery remove the injurious secretions from the vagina.

Third. Immediately after delivery cleanse the eyes of the infant with a fluid which shall remove the injurious material or destroy its action.

The next step was that of Bischoff, who suggested in 1875, the disinfection of the vagina by means of carbolic acid, and the eyes by means of salicylic acid.

In 1876 Schiess proposed that midwives should disinfect the eyes immediately after birth.

At this time the importance of preliminary disinfection of the vagina became generally recognized and put in practice

in all well-organized lying-in hospitals. Still it was found impossible by this means alone to prevent the danger of infection. Though thoroughly removed, secretions will reform during a protracted delivery, and notwithstanding this precaution, no small percentage of infection continued to exist.

In the opinions of Fuchs, infection does not always or even usually occur during the delivery, but afterward, when the child opens the eyes and admits the material which adheres to the lids and lashes, the admission of which is still further encouraged by winking, hence the importance of directing prophylactic efforts more particularly to the eyes.

The first demonstration regarding local prophylaxis was made by Perringer. He observed that if undertaken within three minutes subsequent to the admission of pus, infection was prevented by the careful irrigation of the cul-de-sac with warm water, and the subsequent application of cold compresses. These observations were verified by Abegg.

Schirmer, thinking the bath water was the greatest source of infection by being the medium of transferring the secretion from the body to the eyes, used a dry napkin to clean the face, and interdicted the application of water to the face until after the second day.

Fieuzal advocated the irrigation of the eye with a four-tenths per cent. solution of carbolic acid, and the subsequent application of cold compresses. Borax, salicylic acid and chlorine water were in turn advocated and condemned.

After pursuing and abandoning each of the above suggestions, Credé secured immortal fame by his great discovery regarding the action of silver nitrate as a germicide of the highest order in this class of cases.

At first his method consisted of careful washing with a solution of borax, the application of a two per cent. solution of silver nitrate, and following this for twenty-four hours with compresses moistened with a solution of salicylic acid.

By degrees this treatment was curtailed by the discontinuance of the preliminary use of borax and the subsequent compresses, leaving the silver portion of the treatment which alone is known by his name.

Immediately after the delivery, the eyes are carefully washed with plain warm water, and a single drop of a two per cent. solution of argentum nitrate is let fall from a pipette on to the cornea, over which the lids are immediately closed. No especial reaction is observed to follow, and after two days the redness has vanished.

He found that in place of having 10.8% of ophthalmia neonatorum, as was the case previous to the adoption of antiseptic precautions, the development of the disease was reduced to one or two tenths of one per cent.

In one series of 1,600 births among a class of individuals in which gonorrhœa was always to be suspected, inflammation was observed to occur in but one or two cases. Reports of the brilliant results following this method of prophylaxis led to its being subjected to the test of experience and observation by the leading obstetricians of Europe.

The following table compiled by Fuchs, *Die Ursachen und die Verhutung der Blindheit*," p. 129, illustrates the results following the execution of the method as compared with the experience of the same observers before its adoption:

COMPARISON OF RESULTS OF VARIOUS METHODS OF PROPHYLAXIS IN OPHTHALMIA NEONATORUM.

Author.	Previous to Prophylaxis.			After Inauguration of Prophylaxis.			
	Total number of Births.	Cases of Blenorrhœa.	Per cent.	Prophylactic Methods.	Total number of Births.	Cases of Blenorrhœa.	Per cent.
Abegg.[1]	—	—	—	Cleaning with water	—	—	3
Schirmer.[2]	—	—	—	Dry cleaning	50	0	0
Bischoff.[3]	—	—	5.6	Salicylic acid	—	—	2.6
Olshausen.[4]	550	69	12.5	2 per cent. carbolic acid before ligating the cord. (1st period.)	137	12	8.8
"	—	—	—		166	6	3.6
Krukenberg.[5]	1266	92	7.3	2 per cent. carbolic acid after ligating the cord. (2d period.)	82	11	13.4
Königstein.[6]	1092	51	4.8	First period	1541	21	1.4
Credé.[7]	2897	314	10.8	Second period	1169	1—2	0.1—0.2
Königstein	—	—	—	2 per cent silver nitrate solution.	1250	9	0.7
Krukenberg	—	—	—	"	703	1	0.14
Felsenreich.[8]	1889	82	4.3	Silver nitrate first period	3000	58	1.9
"	—	—	—	" second period	2100	21	1.0
Russel Simpson [9]	—	—	11.76		—	—	5
Bayer.[10]	1106	136	12.3		361	0	0

[1]) Nagels Jahresbericht f. Augenh. für 1881, p. 337. [2]) Citirt von Königstein. [3]) Horner, Handbuch der Kinderkrankheiten, heraesg. v. Gerhardt, V. B., 2. Abth., p. 264. [4]) Berliner klin. Wochenscrift, 1881, Nr. 8. [5]) Archiv für Gynäkologie, XXII. B, p. 329. [6]) Archiv für Kinderheilkunde, III. B, 1882. [7]) Archiv. f. Gynäkologie, XXI. B., p. 181. [8]) Wiener med. Wochenschrift, 1883, Nr. 35. [9]) Annales d'oculistique, XC. B, p. 145. Scheint die Catarrhe mit zu den Blennorrhoen gezählt zu haben. [10]) Archiv f. Gynäkologie, XXX. B.

No stronger proof of the efficiency of the method would seem to be required. It has been endorsed by the leading obstetricians and oculists of Europe and America, and is now in use in most of the lying-in hospitals of the world. Yet the objection will be raised here, that, though it is undoubtedly correct and should be practiced in hospitals where women of doubtful character are the rule, it is too heroic for private practice when one knows his patient to be free from gonorrhœal infection.

This question is one of vital importance, and deserves discussion. It has been my lot in the past few years to see eyes lost from ophthalmia neonatorum in which the mothers of the children were wives of clergymen, merchants and farmers, who have never been suspected, but in whose cases the development

of the purulent ophthalmia in the eyes of the infant is the best evidence of the existence of at least a malignant leucorrhœa. It is well known that gleet, which, in the male would be a source of perpetual or periodic discomfort, owing to the loose folds of the vagina, is often never suspected by the incumbent, much less her physician. On this account it is never certain where the line shall be drawn, and when it is safe to omit the remedy. Besides the remedy is absolutely safe and harmless in any case. At most, a slight swelling and redness is observed which disappears in forty-eight hours, and should not stand as against the danger of infection.

Prevalence of gonorrhœa is in proportion to the density of population, and hence the frequency of ophthalmia neonatorum is greater in Europe than in America; is greater in large cities than in country towns; but even in small towns, comparative infrequency of the disease makes it relatively more treacherous and dangerous, for a danger which is kept permanently before the minds will assert itself, and provoke popular demand for means by which it shall be removed; while one which is rarely observed is easily forgotten, and we are only alarmed by its presence after it has stricken its victim.

In Sangamon County, to my knowledge, the blindness of two children from ophthalmia neonatorum would have been prevented had the Credé method been in general use. In each case the father had contracted gonorrhœa while the mother was ignorant of its existence. Would not the prevention of blindness in these two compensate for a slight additional attention in the cases of many? The answer to this will depend somewhat on the position taken regarding treatment.

Second. *What are the facts regarding treatment?*

Dr. Prendergast, health officer of Cincinnati, tells us that one-third of the deliveries of that city are conducted by midwives, most of whom consider themselves competent to take charge of a simple inflammation of the eyes.

A large portion of the remainder are not seen by a physician more than once after the delivery, and the care of the child is left in the hands of the nurse, who is usually as conceited as the midwife. The following too often occurs: During the first and second days the eyes are kept closed. On the third or fourth day a slight amount of discharge, it may be with swelling, is observed. Nurse takes little account of it, applies chamomile tea or mother's milk, and hopes it will be better. Next day there may be more swelling or discharge. Baby has taken cold or seen too much light. More mother's milk or chamomile tea; perhaps a poultice of slippery elm or rotten apples is applied. If worse on the following day, a physician is called. He may or may not secure a view of the cornea. In the absence of an available specialist he assumes charge, and does the best he knows. A solution of boric acid or other mild germicide is prescribed, and they are told to clean the eyes every half hour, and let him hear on the following day. The nurse executes the directions for she is now alarmed. The lids are not everted. The acrid discharge remains. The cornea is macerated and infected, and the chances are, twenty-five in one hundred, that sight will be permanently impaired.

My purpose, at this juncture, is to call attention to the fact that reports from a number of careful and conscientious observers go to show that 100% of these cases should escape injury of the cornea, and recover with unimpaired vision, *if each case were reported immediately to a physician, and each physician, with the courage of his convictions, put his information into practice without hesitation.*

In order to emphasize the results of intelligent treatment, reference is directed to the observations of Dr. S. C. Ayres, of Cincinnati, who has published a comparison between two series of one hundred cases each.

The first series is that of one hundred consecutive cases taken from private practice. In each case is shown the age of the child when first seen; what complication, if any, and

result in each eye. These cases were not neglected for want of means, but for the want of knowledge regarding the importance of early and correct treatment.

From a study of this series, the following has been adduced: Forty-two per cent. had corneal complication *at the time* of the first visit—leading to permanent impairment of sight. Fifty-eight per cent. were free from corneal complication at the date of the first visit. Of these, in no case did the cornea become involved during treatment.

The second series was that of one hundred consecutive cases treated from the commencement in the Cincinnati Hospital.

No case in this entire series developed corneal complication or suffered impairment of vision in a single eye. The reputation of Dr. Ayres for conservatism in observation and expression, together with the fact that one simple line of treatment has conducted one hundred consecutive cases to a successful issue, leads me to quote from him regarding the treatment which has been pursued in the Cincinnati Hospital during a period of fifteen years.

"The treatment of these cases which was carried out almost entirely by the internes under the supervision of the attending oculist on duty, was with little variation as follows:

"The eyes were cleansed every hour or half hour, or even oftener, in cases where the discharge was very profuse, by gently separating the eyelids with the fingers and removing the accumulated pus with cotton or a camel's-hair brush. A solution of alum, gr. ij. ad. aqua ℥ ss. or of argent. nitr. gr. ij. ad. aqua ℥ i. was dropped into the eye every hour or two. Cold compresses were used in some cases and seemed to be very grateful.

"Every morning the eyelids were everted and brushed with a solution of argent. nitrat. grs. v. ad. xx ad. aq. dest. i. according to the severity of the case, and the lids washed off with tepid water. Unless the swelling of the lids mechanically prevented it, the cornea was inspected *daily* in each

case. As the case improved the interval between the instillations of alum and argent. nitrat. was increased, and finally discontinued entirely, but the argent. nitrat. was continued in a weaker or stronger solution, until every trace of the disease had disappeared.

"The greatest stress was laid upon the thorough cleansing of the eye in the acute stages of the disease, and this was attended to not only by day but by night.

"To this part of the treatment do we owe the immunity of the cornea from ulceration. The pus is neutralized or coagulated by the action of the nitrat. and alum, and its corroding effects thus prevented.

"Another important point in hospital treatment is that the cases receive attention *immediately* the slightest swelling of the lids is noticed, and the severity of the disease is probably thus diminished."

NOTE.—Upon recent correspondence with Dr. Ayres, he writes: "At the present time I use a solution of sublimate more frequently, but doubt if it is better than alum. When a child is born in the Cincinnati Hospital, its eyes are treated at once with a solution of argent. nit. and this prophylactic treatment has about stamped the disease out, so that it is seldom seen."

To further illustrate the amenability of the disease to treatment, at my suggestion, Dr. H. W. Woodruff, House Surgeon of the Illinois Charitable Eye and Ear Infirmary, searched the records of the Infirmary for the year commencing April 1, 1892, and ending April 1, 1893. He found the total number of cases treated to be fifty-three. In four cases the cornea of both eyes had sloughed, resulting in blindness. In eight cases the cornea was ulcerated, recovering with impaired vision. Forty-one, admitted before corneal complication had occurred, recovered with unimpaired vision.

In this report it appears that 22½% of the cases suffered irretrievable injury before they were reported, while of the

77½%, in which treatment was commenced before corneal complication occurred, none suffered impairment or loss of vision.

In these cases the local treatment was substantially that pursued in the Cincinnati Hospital, except that many were treated as out-patients, and hence received less care and regular attention.

In the treatment of ophthalmia neonatorum, the silver nitrate has given better results than any other agent, and on account of merit, has been accorded supremacy over all others.

The results, as shown above, so far as efficiency is concerned, are such as leave little more to be desired. Besides, there is nothing in the treatment which cannot be carried out by any intelligent physician who will take a little pains to acquire the manipulation of the lids. When the swelling is great they are everted by slight pressure on the lids with the first and second fingers, but as the swelling recedes, it often becomes necessary to exercise some traction on the cilia, when the eversion is accomplished with or without the aid of a pencil or similar object over which the lids may be turned. It may not be amiss to state that there is but one proper position for the patient in treating ophthalmia neonatorum, viz. : Body recumbent in the lap of nurse or attendant; hands held, feet free, with head of child resting between the knees of the physician. In this position the efforts of the child do not move the head, and the touch of the operator may be both firm and gentle.

LEGISLATION.

Our third inquiry is relative to legislation, to take the management of these cases away from the irresponsible and ignorant, and entrust them to the intelligent guidance of a qualified physician.

The first legislation affecting the prevention of blindness by means of limiting the liberty of nurses and midwives occurred in Switzerland in 1865. Here it was made obliga-

tory on the part of midwives and nurses to report every case of ophthalmia of the newborn immediately upon its discovery.

Prof. Horner became the champion of the legislative effort, and devoted himself through his personality and skill toward increasing the efficiency of the law.

During his lifetime he proudly enjoyed the knowledge of the fact that no child born since 1865 was admitted into the large Institution for the Blind in Zurich with sight lost from ophthalmia neonatorum.

In Prussia the regulations for 1878 give particular directions and instructions concerning this important point. In France, in 1888, the official directions for nurses and midwives urge the danger of delay. Austria in 1882 established official directions for nurses, by which it now requires that every nurse or midwife, upon the development of ophthalmia of the new born should immediately call a physician.

The Hungarian Secretary of the Interior this same year issued a pamphlet upon the subject of the ophthalmia of infants, designed for distribution among the nurses of that country.

In this country, the first steps affecting legislation for the prevention of blindness was inaugurated by Dr. Lucian Howe, of Buffalo, N. Y.

In 1887 he presented the matter to the American Ophthalmological Society, which was followed by an animated discussion, and the appointment of a committee to report on the Causes and Prevention of Blindness, consisting of Lucian Howe, Swan Burnett and Joseph A. Andrews. In 1889 he read a paper at the meeting of the New York State Medical Society on Purulent Conjunctivitis of Infancy, and closed with the recommendation that the committee on legislation formulate a law requiring nurses and midwives to report at once to some legally qualified practitioner. This was done, and at the next meeting of the legislature the following law was passed :

The people of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Should any midwife or nurse having charge of an infant in this state, notice that one or both eyes of such infant are inflamed or reddened at any time within two weeks after its birth, it shall be the duty of such midwife or nurse so having charge of such infant to report the fact in writing, within six hours, to the health officer or some legally qualified practitioner of medicine of the city, town or district in which the parents of the infant reside.

SECTION 2. Any failure to comply with the provisions of this act shall be punished by a fine not to exceed one hundred dollars, or imprisonment not to exceed six months, or both.

SECTION 3. This act shall take effect on the first of September, eighteen hundred and ninety.

Since that time a similar bill has passed the legislature of Maine. Bills to effect the same purpose have been introduced this past winter in the legislatures of Ohio, Pennsylvania, Minnesota, Illinois and the Dominion of Canada.

The New York bill, with a slight modification, was introduced at my suggestion by Senator Higbee, in the Illinois legislature. It has passed the senate and is pending in the house.

Owing to the unusual length of the calendar and the urgency of special legislation, the bill may not reach final consideration before adjournment, but in any event the progress thus far has been educational, and the foundation for future efforts in this direction has been laid. The matter is one of importance and it becomes the duty of each of us to make it a personal matter to urge the establishment and enforcement of laws in this or other states requiring the surrender of the treatment of infantile blennorrhœa from incompetent hands.

The effect of the law in Zurich has been better than we can hope for here, but if every physician in Illinois should prepare himself with the simple knowledge and skill required

for the management of these cases, and not shrink from doing his duty, and compelling midwives and nurses to do theirs, the result will be a great economic gain to the state besides the prevention of incalculable misery to numerous members of the generations to follow.

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SYMPHYSIOTOMY COMPARED WITH ITS SUBSTITUTES, WITH REFERENCE TO A CASE OF SYMPHYSIOTOMY.

BY H. McKENNAN, M.D., PARIS.

No operation known to the modern surgeon has been subjected to the abuse and professional prejudice as has that of symphysiotomy; and the results of the early operations would justify an universal condemnation.

A little over a century ago the Italian surgeon Sigault introduced symphysiotomy. Of the first forty-four cases following the introductory operation, fifteen women and thirty-two children were lost, while an ununited symphysis, an injured sacro-iliac synchondrosis, or a vesico-vaginal fistula were not unknown complications.

Osbourn voiced the professional opinion of 1783 when, in his "Essays on Midwifery," he said, "No circumstances whatever, real or imaginary, can ever render it a warrantable operation." The common sentiment of the English physicians, in the first half of the present century, was expressed by Churchill when he said, *"By every modern British writer the operation is denounced, and is not likely to be ever again attempted in this country." Soon after Dr. Churchill's declaration the operation was abandoned. †For seven years prior to 1865 there was probably no case of symphysiotomy in the world.

The factors that contributed to the failure of those early operations were unskillful obstetrical manipulations and septic surgery.

* Churchill's System of Midwifery.

† Transactions American Gynecological Society 1892. (Harris).

Prof. Morisani, of Italy, revived the operation, and under his teachings its technique was perfected, and therefore its mortality materially lessened. *From Jan. 8, 1886, to Feb. 1, 1893, there were fifty-seven symphysiotomies, and all the women recovered except one. This woman was in labor several days before the operation was performed, and she died of peritonitis, due to septic poisoning of the birth canal and not from the operation.

We have for contrast a report of forty-four of the earlier cases, with a fœtal loss of 72 8-11 per cent. and a maternal mortality of 34 per cent., while as a result of antiseptic technique and properly applied obstetrical principles, the maternal mortality is practically zero, and the fœtal loss since 1886 has not been higher than 11 per cent. †In no instance has a child been delivered absolutely dead.

To Dr. Robert P. Harris, of Philadelphia, is due the credit of introducing symphysiotomy into America. By laboriously collected statistics he demonstrated the great value of the operation when performed under aseptic and antiseptic precautions.

I had never entertained a friendly feeling toward the operation of pubic section until I was forced to compare it with the other operations intended to accomplish the same end, and select one which, in my judgment, would give the patient the best possible chance, both for herself and child.

The case of symphysiotomy to which I shall refer was reported in the Medical News, Feb. 4, 1893. So far as reported, this was the first pubic section west of the Ohio River, but in America it was ante-dated by the operations of

‡ Prof. Chas. Jewett, of Brooklyn, Sept. 30, 1892.
Prof. Barton Cook Hirst, of Philadelphia, Oct. 3, 1892.
Prof. Anna E. Broomal, of Philadelphia, Oct. 7, 1892.
J. Edwin Mitchel, of Baltimore, Oct. 24, 1892.

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* Noble before College of Physicians of Philadelphia, Feb. 1, 1893.
† Dr. Robert P. Harris. (Private Communication).
‡ Medical Record. April 22, '93.

Prof. Chas. P. Noble, of Philadelphia, Dec. 5, 1892.

Prof. J. A. Springle, of Montreal, Dec. 5, 1892.

About the first of October, 1892, I was asked to take charge of Mrs. S., who was then pregnant and within two months of full term. Knowing that the woman had a contracted pelvis, with an antero-posterior diameter of three inches or less, and that there was no possibility of removing her to the aseptic wards of a lying-in hospital for the purpose of an operation, I felt a great timidity in assuming the responsibilities of the case.

The woman was anxious for a living child. She had twice previously been delivered by craniotomy, and was now willing to submit to any operation if the life of her baby might be preserved.

The different operations were explained to her. She opposed the induction of premature labor, and embryotomy she would consent to only as a last resort. It was then a choice between Cæsarean section and symphysiotomy. At first we were inclined toward the former, but after a close study of the reports of recent operations, by both methods, we were compelled to select symphysiotomy as the least objectionable.

Dec. 16, 1893, assisted by Drs. Z. T. Baum and W. H. Tenbroeck, I divided the symphysis with a narrow probe-pointed metacarpel saw, and by the high application of the forceps an eight-pound child was delivered. The woman had been in labor eight hours. A dressing of boric acid powder, protected by surgeon's silk isinglass plaster, was applied. A vaginal injection of a solution of mercuric chloride, 1 to 2000, was given once daily until the lochial discharge ceased. The woman suffered no pain from the region of the symphysis, and she made an uneventful recovery. The child lived and is now in excellent health. For a full report of this operation I refer you to Medical News of Feb. 4, 1893, page 130.

Probably the safest and best method of dividing the symphysis is by the use of the sickle-shaped knife of Galbiati. With this instrument there is no danger of wounding the

urethra, vagina or bladder; yet such an accident is not likely to happen to any careful surgeon, no matter what instrument he may have in his hand.

The experience of the last few years has demonstrated that there should be no objections to symphysiotomy in suitable cases and when properly performed. The pelvic diameters are increased sufficiently to allow the child to pass. The sacro-iliac synchondroses are not interfered with, while the pubic bones reunite with marked rapidity and firmness. (However, Dr. Grandin has reported a case of faulty union).

The operation is particularly indicated in cases where there are no ankylosed pelvic joints, where there are no obstructive growths, and where the antero-posterior pelvic diameters range between two and three-fourths and three and three-fourths inches. It is contra-indicated in either a Robert's or Naegle's pelvis, where the conjugate diameter is less than two and three-fourths inches, and where there is a dead fœtus. The operation should not be preceded by frequent unsuccessful attempts to deliver with forceps, and it should be done early. Whether the patient be in a tenement house or a well equipped hospital, as soon as the os is sufficiently dilated the operation should be done. Death follows delays and exposures, necessarily caused while removing the patient from her home to the hospital. April 12, 1893, Dr. Harris wrote me as follows: "Since January 1st, 1886, Italy has lost two out of forty-four cases, and the two women were in labor three and one-half and four days respectively." "We have had sixteen operations in the United States in the six months ending March 29th, with a loss of three women. No case died from the operation, but from puerperal conditions existing prior to it, or from exposure in going to hospital, producing double pneumonia."

Symphysiotomy comes in direct competition with Cæsarean section. With the improved Cæsarean method brilliant results have been accomplished. * Recent reports show that its

* Transactions American Gynecological Society, 1892. (Harris).

mortality can be lowered to six per cent. In the hands of skillful surgeons, and under favorable circumstances, the success of Cæsarean section can be predicted with almost a certainty, and it will always retain a high position among obstetrical operations. But in a case where the antero-posterior pelvic diameter is greater than two and three-quarter inches; where the vagina, uterus and bony parts are free from obstructive growths; where there is no ankylosis of the coxalgic or sacro-iliac joints; and especially where there are no hospital facilities, pubic section offers a less formidable operation and is, therefore, less dangerous.

The Porro Cæsarean method is especially adapted to cases complicated with obstructive pelvic tumors. Its mortality has been greater than that of the classic operation.

The induction of premature labor is objectionable, as it not only jeopardizes the life of the mother, but predisposes the child to hydrocephalis and other neurotic tendencies.

Formerly, in difficult labors, an attempt was made to save only the life of the mother, but to-day the responsibilities of such a case demand of the surgeon the preservation of two lives instead of one.

Craniotomy, which still has its advocates, is the most barbarous practice of our age. After the introduction of the improved Cæsarean method, with its remarkable results, it was thought that the killing of unborn babes would cease. Yet how often have we been compelled to listen to the boasts of men who were proud of the large number of craniotomies they had performed. For this pernicious practice symphysiotomy offers a substitute which is simple and safe.

The proper application of surgical and obstetrical principles has demonstrated the fact that there are few cases in which a sacrifice of the living fœtus can be considered justifiable.

When we have acquired the habit of accurately applying the principles of pelvimetry, when we have familiarized ourselves with the technique of modern obstetrical operations,

and have at hand the appliances for the performance of the same, when we have thrown off the prejudice accumulated from ages past, and have universally accepted the truths as taught by science and experience in regard to cleanly surgery, then, and not till then, are we prepared to render services to parturient women with distorted pelves.

SYMPHYSIOTOMY.

BY GEO. N. KREIDER, M. D., SPRINGFIELD.

Dr. McKennan, having already gone into the history and methods of procedure of this operation, it is my object to simply report a case in which a symphysiotomy was done, and give my reasons for undertaking it. I know the results can hardly be said to be an argument in its favor, but no one has yet claimed, I believe, that it would be successful in every case.

I was called Wednesday, March 2d, at 7 P. M., in consultation with Dr. James of Springfield, to see Mrs. P., a primipara. She was born in Illinois, was twenty-six years of age and had been married about a year. She had been in labor then about forty-three hours. Dr. James saw her about an hour after the pains began, and made his second visit in about thirty hours after the first visit. About the time of his second visit the fœtal movements ceased and this was about sixteen hours before the operation was performed. The waters broke about nine hours before the operation. The doctor had urged the delivery in every way, including the application of the forceps, when I was called. We together tried the forceps faithfully again, but with no better success. The head was wedged in the brim and it was impossible to move it in either direction. The child was evidently dead, as no fœtal heart sound could be distinguished. Under these circumstances two operations suggested themselves, viz.: Craniotomy or symphysiotomy. The decision was in favor of the latter, for the following reasons:

The patient was twenty-six years of age and had been a school teacher. I mention her former occupation, for it has been my

observation that child-bearing is unusually difficult in ladies who have served as teachers. Her height was five feet, weight ninety-two pounds. She had suffered from chorea when a child and had nervous twitchings about the mouth when I first saw her. The parts were more or less bruised by the efforts at delivery which had been already made. I thought that the procedures necessary for a craniotomy under these circumstances were unusually hazardous. The following measurements made, with the assistance of Drs. James, Ryan, and Matheny, confirmed that opinion in a striking manner:

		Normal.
Distance between the spines of the ilia, -	$8\frac{1}{8}$ In.	$10\frac{1}{4}$ In.
Distance between crests of the ilia, - -	$9\frac{1}{4}$ In.	$11\frac{1}{4}$ In.
Conjugate estimated to be - - - -	$3\frac{1}{8}$ In.	$4\frac{1}{4}$ In.

The measurements proving so small in every diameter, it was decided that it would be safer to do a symphysiotomy accordingly, and this operation was undertaken about ten P. M., with the assistance of the gentlemen already named. The urine was drawn with a silver catheter which was left in place and served by its weight to keep the urethra far from the site of the incision. The parts were cleansed and shaved. The external incision was made with an ordinary scalpel and the notch indicating the joint quickly located. Then an old fashioned probe-pointed lithotomy knife, for which I was indebted to Dr. Ryan, was inserted and the cartilage cut much in the same way that one cuts cheese and with no more difficulty.

The bleeding was insignificant and required no ligatures. The urethra and bladder were not injured in the least. The bones were supported by Drs. James and Matheny while Dr. Ryan delivered the dead child with the greatest ease with the forceps. The bones were drawn together as much as possible by sutures and an adhesive bandage drawn around the hips. The parts were irrigated, a pledget of iodoform gauze inserted in the vagina and the patient returned to the bed apparently in better condition than when the operation was commenced. I regret to say that owing to the excitement at the time the following imperfect measurements were all that were taken:

Weight, 8 lbs.; child dead.

Distance from the occiput over the vertex to the chin, -	10 In.
Distance from the forehead to the chin, - - -	$4\frac{1}{2}$ In.
Distance from meatus to meatus over occiput, - -	9 In.
Distance from meatus to meatus over the vertex, -	$10\frac{1}{4}$ In.

These imperfect measurements with the weight will probably be sufficient to show a very large child when the height and weight of the mother are taken into consideration. I might mention here that the father is a man 6 ft. 1 in. high and weighs about 170 pounds. This probably accounted for the large size of the child.

I saw the patient the next day, and, outside of the continuation of the nervous twitching, she seemed to be doing well and so expressed herself. I did not see her again for five days, when I was again in consultation with Dr. James, for the fever which had developed, the doctor thought from hard scybala with which the large bowel was filled.

Persistent effort was necessary to unload the bowel. The lochia were not satisfactory, however, and uterine irrigations were practiced after curetting. The patient succumbed on the 11th day after the operation. The cause of death was probably septic peritonitis. I did not see her for several days before the death. Dr. James continued the treatment and made every effort to avoid the unfortunate termination.

I regret very much the unfortunate termination of the case, as well as the fact that it was performed on a poor subject and not under the best circumstances. My belief in the simplicity of the procedure has not been shaken, and should another case arise in my practice where a choice was necessary between this and craniotomy, I should unhesitatingly declare in favor of this. Craniotomy on the living child especially is an operation very much against my liking.

My conclusions are: 1st. Symphysiotomy should be undertaken early.

2d. Is not difficult to perform.

3d. It is preferable to craniotomy in nearly every case.

DISCUSSION.

Dr. W. W. Jaggard, Chicago (opening the discussion):

Mr. President. I have listened to the papers of Drs. McKennan and Kreider with a great deal of interest. The recent extraordinary developments in the operation of symphysiotomy demonstrate to us that the world moves. It is only about two years ago, in teaching the subject of operative midwifery, voicing the general authoritative opinions on this subject, that I declared vehemently against the operation of symphysiotomy as unjustifiable on all grounds, both rational and moral, and less than a period of six months after that I found myself veering around and eagerly looking for a case upon which symphysiotomy could be performed. The present status of the operation has been admirably stated by Dr. McKennan and nothing can be added to the description. The statistics up to date are fifty-seven cases with a maternal mortality of one case, and with the salvation of all children with one exception. However, the operation, I believe, must be confined to the continent of Europe chiefly. It is a fact, I think, that has been demonstrated in this country, that we do not often encounter the high types of pelvic deformity that indicate this operation. Contracted pelves in all native American women is one of the anomalies. Occasionally we find a slight degree of pelvic contraction. Contracted pelves may be divided into three degrees. First, the lowest contraction from eight to eleven centimeters in the antero-posterior diameter of the pelvis. We occasionally meet with contraction in the second degree, and we meet with contraction of the pelvis below six centimeters occasionally. We find the contracted pelves in the class of women that come to this country known as emigrants from Germany, Italy, and the southern part of Ireland. They are young and vigorous women, so that the future history of this operation must be confined to Europe.

The latest authoritative statement on symphysiotomy is interesting to note, and comes from Dresden from Leopold's clinic. It was in Saenger's and Leopold's clinics, in Leipsic and Dresden that the modern conservative Cæsarean section originated somewhere about the year 1880. It is further interesting to note that in this clinic where the modern conservative Cæsarean section was first perfected in technique, already symphysiotomy has taken its place. Symphysiotomy has already practically supplanted craniotomy upon the living fœtus, which Dr. McKennan admirably characterizes as "a most barbarous procedure."

I hope what criticisms I have to make on the papers of Drs. McKennan and Kreider will be taken in good part, for my remarks will be entirely impersonal. The papers are here for discussion,

and I hope the gentlemen will free me from any imputation of harsh or uncharitable criticism. Harsh criticism would be particularly unbecoming in me. I have performed Cæsarean section in a number of cases, but have never performed or seen performed symphysiotomy. However, there are some points in both papers that can be justly criticised, and first in regard to Dr. McKennan's paper. The pelvic measurements in his case are not sufficient to permit any one to form an intelligent conception of the size of the pelvis, in order to judge whether symphysiotomy was indicated or not. From the description of the size of the pelvis and of the size of the child, I think there are a number of operative procedures that might have been chosen in the case, and among them, first of all, the induction of premature labor. Second, prophylactic version and extraction, an operation suggested and practically originated by Simpson, and afterwards taken up by Gusserow of Berlin. I take it, that the pelvis was of the first degree of pelvic contraction. Version and extraction of the child, provided the cervix is dilated sufficiently, seems to me to have been adapted to his case. Third, high forceps with good instruments — axis traction instruments. By high forceps, it seems to me that the babe might have been extracted. I am unwilling to admit that the high forceps operation is more difficult than symphysiotomy. Technically, it is fraught with less danger both to mother and child, under these conditions. I think the doctor was right in excluding conservative Cæsarean section and craniotomy. I think craniotomy on the living fœtus is practically an obsolete operation. I do think that in this case there are at least three procedures that ought to have been considered. First, the induction of premature labor between the thirty-second and thirty-sixth week. Second, prophylactic version and extraction. Third, possibly high forceps with good instruments.

I desire to call attention to another point, and that is, no one outside the man who is present at the time of the operation, is ever in a position to offer a perfectly competent opinion. Dr. Kreider's case was one in which symphysiotomy was very strongly contra-indicated. I do not think there can be a shadow of doubt about that. Of course, this opinion is given from the standpoint of an outsider, and, therefore, such an opinion is necessarily considered incompetent, but still, from that point of view, I should say the operation was totally unjustifiable, for the reason that the child was dead, and the pelvic contraction was not so great but that by craniotomy and crushing the head it might have been removed through the natural passages. I do not think, however, in his case it would have made the slightest difference in the result, as the history of the case indicates that the woman was infected before he came in contact with the case.

There is one point in the beginning of the operation that was not mentioned, which I think is worthy of note, and that is, there is sometimes a little difficulty in finding the pubic symphysis. Most female pelves are obliquely situated, and the symphysis is not always in the median line. Of sixty pelves recently examined, it was found in the median line in about eight, that is, in the sagittal section when the woman is lying on the table. In about forty the symphysis deviated to the left of the median line a centimetre and a half. It is historical that Pederow failed to strike the pubic symphysis on account of lateral obliquity of the pelvis after Sigault's introduction of the operation of symphysiotomy.

Dr. Henry Parker Newman, Chicago:

I would like to report a case which has recently occurred in my own practice, but I can do so only imperfectly because I have not the data with me.

In this case there was narrowing of the pelvic brim complicated with complete atresia of the cervix, large head, occipito-posterior presentation, uterine inertia, and an exhausted condition of the patient who had been in labor twelve hours when I was called in.

The woman had been delivered of a child some eight years ago, by forceps in the hands of a very competent physician in this city.

An enormous tear resulted, extending entirely through the cervix to the cervico-uterine juncture, and this condition was the cause of permanent invalidism in the patient.

I operated, about two years ago, upon the torn cervix, but did not succeed in completely restoring health, though much benefit resulted. Pregnancy followed, and the subsequent atresia is easy of explanation. The lumen of the canal was very small after the operation and the erosions incident to cervical endometritis in the early months of pregnancy effected complete occlusion.

I incised the cervix at the point at which the slight dimpling was observed, and dilated sufficiently for the introduction of two or three fingers.

Retraction, however, was imperfect, and the cervix hung as a meal bag, or in the pelvis.

I called in Drs. J. L. McCollum and F. S. Cheney and submitted to them this proposition: Taking into consideration the existing conditions, with the head at the brim, in the occipito-posterior presentation, to do as had been done in the former delivery, introduce the long forceps and draw the child down below the brim of the pelvis and run the risk of still more extensive injury than had occurred before.

NOTE: Measurement of pelvis and child's head as follows:

Between iliac crests,	25 Cm.
Superior spinous processes,	23 Cm.
Symphysis pubis and (upper) spinous process of sacrum	18 Cm.
Occipito-mental diameter of head,	15 Cm.
Occipito-frontal,	13 Cm.
Biparietal,	10 Cm.
Bitemporal,	9 Cm.
Trachelo-bregmatic,	10 Cm.
Fronto-mental,	10 Cm.

DR. C. W. EARLE, Chicago.

It appears to me that we are entering upon another era, and that this one is to be the era of dividing the symphysis pubis to deliver a baby. The profession in the past have given the operators very wide latitude. Many years ago they were allowed to operate upon a multitude of cervices, some of which needed operation, and were benefited, others that did not need an operation, and were really made worse, and years of suffering have followed. Then came the opportunity that our operators had of removing a multitude of ovaries, some of which were diseased and the patient was made better, others were just as healthy as possible, but the woman has suffered ever since. The operation did no good; indeed, the woman has been sick ever since. And then came the Alexander operation era, and more recently our operators have had the opportunity of doing a large number of hysterectomies, sometimes when there are indications for the operation, and sometimes when none were present, — but they have operated. Many of these gentlemen have performed these operations, who at this time would not for a moment think of the procedure. Many of our operators confess that the cervix operation is not indicated as it was formerly; they say the same in regard to oöphorectomies, and of the Alexander operation, but others (operating aspirants) are pressing forward to new fields. It seems that the female sex must be offered up on the operating table to those of the past generation who have nothing to do, and to the present, whose only desire seems to be "to operate." If gentlemen who are particularly qualified would do these operations, I would not offer a single criticism; but it is not the skillful men who are clamoring for operations, it is not men who by observation and study are best fitted who are now demanding new fields for operative work; but the profession is crowded with men who have had very little study for special work, and many of them not the experience of general practitioners. It is not an unusual sight to find men and women within two years after they have graduated from our schools, bid-

ding in every imaginable way for "special work," and operating in every possible direction.

To-day we have had reports of two or three cases of symphysiotomy, and if a vote of this section was taken at this moment, I believe a majority would not think them justifiable.

I would like to ask Dr. Newman what the measurements of the pelvis were in the case that he operated on?

Dr. Newman:

I am unable to do so as I have not the data with me.

Dr. Earle:

I have been taught that there were certain objections to doing this operation, although I have no doubt but that, under approved methods, certain cases are justifiable, but there must be a positive indication, and it must be done by men specially qualified, in order to give success.

It appears to me that the articulation as the symphysis pubis was made for some purpose, and that its destruction, no matter how firm the union afterward, is liable, in some hands at least, to be followed by impairment of locomotion; and so I say that if the operation is to be done, it must be positively indicated, and then must be done by a skillful person.

I have been a little disappointed with some of the procedures in obstetric practice which have been noticed in the papers to-day. If I understood correctly the term has been used, "repeated intrauterine injections;" and, in addition to this, curettements have been referred to rather casually. There is a tendency, in my judgment, on the part of some physicians, to do both of these operations too frequently, to do them when there is no absolute necessity.

Curettements of the uterus for retained debris after an abortion, is one of the most successful operations which one can do. Curettement as practiced by some is followed by very dangerous complications, and curettement of the uterus at full term is an operation which may be followed by an infection which is much more dangerous than that which existed before the operation was done. Repeated curetting, if the first operation is well done, is not necessary, and whenever done should be done with the greatest possible care. Curetting of the uterus at full term is very rarely indicated; curetting of the small womb after abortion, is more frequently demanded, and both operations should be done with the utmost care, and under the most absolute antiseptic precautions.

Repeated intrauterine injections are always unnecessary; often the first intrauterine injection is absolutely uncalled for, and the vaginal douche, unless given by some one who understands the

principle of obstetrical cleanliness, and is thoroughly imbued with the importance of the same, is better left undone than performed.

In closing, I have only this to say: I am in favor of doing every operation, and resorting to every method which is indicated, and which is for the safety of the patient. I am not in favor of doing anything, either to make a show of operation, or to convince the people that some great procedure was necessary, in order to increase their bills.

When a case is doing well after confinement, let it alone.

DR. MCKENNAN:

Dr. Jaggard said that the operation has been thoroughly tested abroad, and that our women (American) have larger pelves, as a rule, and that perhaps in the cases reported the operation was not indicated, and that other methods, such as version and the high application of traction forceps, might have been used. To draw from the report of this case from The Medical News, I will say the antero-posterior diameter was two and three-quarter inches. In Germany, surgeons operate where it is above three inches. However, that makes very little difference. It is the relative size of the child's head to the mother's pelvis. Where a case becomes so impacted that death of the child is imminent or inevitable, I can see no reason why symphysiotomy should be objected to. The average weight of the patient whose case I reported was 102 pounds, and height four and a half feet. Her two previous labors were attended by two of the best obstetricians in our part of the country, and I think version and the high application of forceps and all other things failed, and during the second time the woman came near losing her life. I am confident that no operation could have delivered a living child of normal size through that pelvis.

Dr. Jaggard also spoke of the pubic symphysis being difficult to find. I do not think so. One can find it by careful examination as a rule. There is trouble, however, of the joint being crooked, like the letter S, as reported by Professor Davis of Philadelphia, in a recent number of The Medical Record.

DR. KREIDER (closing the discussion):

I think Dr. McKennan and I have been thoroughly criticised in the discussion. I expected this and suppose I deserve it. In his remarks Dr. Jaggard made one statement that deserves praise, viz: that no one can appreciate the indications for an operation so well as the surgeon in charge of the case. I hope the members of the Society will appreciate the position in which I was placed. I had to deal with a patient with a very limited pelvic capacity, containing a large child and weakened by a labor of some forty hours duration. She had been bruised already by the repeated applica-

tion of forceps. I canvassed the matter thoroughly, and, in consultation with others before the operation was undertaken. The operation in my case was most simple, and was performed more easily than any of the several craniotomies I have made.

In reply to Dr. Earle I would say, that I try to use some judgment in deciding on operating on cases. I am free to say that I make mistakes, but I hope I have not the reputation of rushing into an operation simply for the sake of doing it. Conscientiously I endeavor to do that which is best for the patient. I may have made a mistake in this case, but I tried to do the best thing for the woman under the circumstances then existing.

PROLAPSUS, WITH RETRO-DEVIATIONS OF THE UTERUS.

TREATED BY VENTRO-FIXATION, WITH REPORTS OF CASES.

BY J. A. PRINCE, M.D., SPRINGFIELD, ILL.

The operation of ventro-fixation is not a new one, being nearly as old as ovariotomy, though it was first done by the indirect method of fastening the stump of an ovary or the pedicle of an ovarian tumor in the abdominal incision, not with the idea of correcting any displacement of the uterus, but simply as a means of disposing of the pedicle. It was afterwards discovered that previously existing displacements had disappeared. Thus, by accident, the operation of hysterorrhaphy, or ventro-fixation, for the cure of uterine displacements, came into use.

The operation was first intentionally done by Koeberle in 1869 for the cure of a retroflexion. He sacrificed one ovary, suturing the stump in the abdominal incision. This method of course produces a twisting of the uterus, and Olshausen soon improved upon it by suturing the round and broad ligaments to the abdominal wall, those portions of the ligament being taken immediately adjacent to the uterus. An objection was found to this procedure in that a ring was left through which intestines might pass and become incarcerated.

In 1887, the operation, as now most commonly done, was brought forward by Leopold of Dresden. It consists of attaching the fundus of the uterus directly to the abdominal wall.

So far as I have been able to learn, the operation has never been widely taken up by American operators. The num-

ber of cases reported are very few, and the literature very meager.

One point which I imagine has deterred many surgeons from attempting it, has been the question of its justifiability. Unquestionably it is not justifiable to open the abdomen and stitch the uterus anterior in a case of slight prolapsus, or retro-deviation devoid of adhesions, and with healthy appendages. The condition present does not threaten life, and beyond some discomfort, the patient can go through life in comparative enjoyment, with the aid of a well adjusted pessary.

The mere opening of the abdomen is not without grave dangers, because we cannot be sure that our details have been perfect. I think the operation is indicated in the extreme degrees of prolapsus, or retroversion, causing symptoms which render the life of the patient a burden both to herself and to her friends. Especially is it so when there exist firm adhesions, or there is present co-existing tubal or ovarian disease. We very commonly find prolapsed and inherent ovaries accompanying these displacements. The suffering which this condition may cause is extremely severe, and one would be fully justified in using any means in reason for its relief. As complementary to other abdominal operations, where indicated, it is always justifiable, as the simple procedure of passing two or three of the abdominal wound sutures through the uterus does not complicate the operation. Many times it will be found necessary to do this, as the supports to the uterus may have been unavoidably destroyed.

In the operation as done by Leopold, the abdominal incision is made in the usual way, though not going as near the pubis; a two and a half or three inch incision will be found large enough for the necessary manipulations. It will facilitate the work greatly if the Treudelenburg posture is employed. After the separation of the adhesions the fundus is brought forward into the wound and held while the sutures are passed. A large curved needle, armed with silkworm gut, is passed down through the abdominal wall on one side, and entering the an-

terior surface of the fundus at about the level with the insertion of the round ligaments, it is passed through the superficial muscular tissues for about an inch, then out through the abdominal wall on the opposite side from the point of entering. From one to three of these sutures are passed and before tying them, the anterior surface of the uterus, where it will come in contact with the abdominal wall, is gently scraped with a scalpel to freshen the surface and make adhesion more sure. These sutures are then tied, and the rest of the abdominal incision closed in the usual way. The sutures are removed about the twelfth day. Some operators attempt to do the operation without incising the abdomen, placing the patient in Treudelenburg's position, and with an assistant pressing the uterus up, by means of a finger in the vagina, the sutures are passed. In my first case the attempt was made to operate in this way, but in the course of a month the adhesions gave way entirely, and I was forced to open the abdomen and refasten the uterus. All traces of adhesion having been present had disappeared.

In many of the cases in which this operation is indicated it would be impossible to break up the existing pelvic adhesions and bring the uterus up to the abdominal wall without opening the abdomen, as it is sometimes extremely difficult to do, even when free access is gained to the pelvis through the abdomen, and besides a great risk is run of penetrating an adherent intestine, as one is working entirely by chance.

The greatest argument against the operation is the uncertainty of the permanence of the adhesion. My cases are of too late date to base much value upon in that regard, though so far as I am able to determine, none of them have given way as yet, except the first one, and since the second operation, done a month after the first, the uterus has been held up firmly.

Leopold has had cases go through pregnancy to term with a natural labor without rupture of the adhesions, while Mundé

had one abort at about the fourth month without a rupture. Pregnancy will be the severest test of its permanency.

Case I. Miss E. M., age twenty-five years:

For several years has been able to be on her feet but very little, and is unable to do any kind of work. Obstinate constipation exists.

Examination: Uterus prolapsed with the os down to the vulva, also tipped backward against the sacrum. Had been under the care of several physicians, and had worn pessaries. I adjusted a pessary Oct. 8, 1891, but was compelled to remove it in November. The tampon treatment was then resorted to, which she carried out at home. She returned in December, and as no improvement was present the operation of ventro-fixation was explained to her and advised. This was done Jan. 6, 1892, without opening the abdomen, an assistant holding the uterus up against the abdominal wall by a finger in the vagina while the stitches were passed. The precaution was taken to introduce a sharp-pointed instrument through the wall and scratch the surface of the uterus to insure adhesions taking place. Stitches were removed about the twelfth day, and she went home in three weeks with the uterus held up in place, apparently secure.

She returned March 21 with the uterus down in its original position. The second operation was done March 22, this time opening the abdomen. No sign of any adhesions having been present were found. Stitches removed in twelve days; went home in four weeks.

I examined this patient about two weeks ago and found the uterus is held firmly to its place. She is much improved in health, and is able to be about a great deal, and to do light housework. Some pain in abdominal wound.

Case II. Mrs. A. H., age forty-five years. One child, age twenty-two years:

Complete prolapsus, the organ, part of the time, being out between the thighs. Removed tubo-ovarian cysts from both sides, and did ventro-fixation in the usual way. This

patient, before the operation, was in constant misery, and wanted me to remove the uterus, but the ventro-fixation has sufficed to correct the displacement, and renders her able to work and find some enjoyment in life, and is a much less serious operation than hysterectomy. Operation done Feb. 16, 1892.

Case III. Mrs. R. H., age twenty-four years; five children:

Lacerated cervix, with prolapsus of uterus and right ovary and tube. Operation, July 6, 1892. Lacerated cervix repaired and ventro-fixation done.

An examination about two months ago reveals the uterus and ovary and tube held up securely. Some irritability of bladder has existed since the operation, and she is pregnant. Her health is better than before the operation.

Case IV. Miss Ada A., age twenty-one years:

Was severely hurt in horseback riding about two years ago, and since that time has been a constant invalid. Suffers severely at her menstrual periods; only able to be out of bed one week in four, and then gets about with difficulty. Obstinate constipation exists.

Examination: Uterus prolapsed and retroverted; bound down securely in the pelvis. Operation, Nov. 7, 1892.

Ovaries and tubes found to be normal; uterus gotten out of its bed of adhesions with great difficulty, and fastened anterior by the usual method. Since the operation she is much improved, but the result is not entirely satisfactory. There is a great deal of pain at the wound site, probably from the dragging upon it by the uterus. Her menstrual trouble is greatly benefited.

Case V. Mrs. W. W. C., age twenty-one years. One child, seventeen months old. Very fleshy; prolapsus of uterus and ovaries. Operation Dec. 21, 1892. Another perfect result.

Case VI. Miss R. F., age twenty-five years:

Gave a history of severe, long continued menstrual diffi-

culty. Examination: Uterus prolapsed and retroverted. Prolapsus also of right ovary and tube, which were very much enlarged.

Operation Dec. 23, 1892. Right ovary contained quite large cysts, and was removed with the tube. Adhesions of uterus to pelvic surroundings broken up and ventro-fixation done.

Result has not been an entire success, as the pain in the wound from the dragging exists in this case as in the other, where firm adhesions were met with. The uterus, however, is held up securely.

Case VII. Mrs. M. E. C., age fifty years. One child, age thirty. At this childbirth the cervix was very extensively torn, and was never corrected. Endometritis present, with consequent enlargement. The os presented at the vulva, and when she is much upon her feet the uterus comes partially out.

Operation Dec. 27, 1892. Amputation of cervix and ventro-fixation. The result in this case is thus far all that could be desired.

Case VIII. Mrs. C., age thirty-five years; three children:

In 1886 Dr. David Prince removed the ovaries and tubes, fastening the stumps in the abdominal incision. Since that time she has had a series of cysts form in the wound. After having four or five successively removed she underwent a more radical operation, and I excised the scar containing the remnants of the tubes, and removed the tubes close up to the uterus. As the organ then remained without support a ventro-fixation was done. She is now free from any trouble whatever. Operation Dec. 30, 1892.

Case IX. Mrs. E. A. P., age thirty-seven years; one child. Prolapsus and retroversion, with a fibroid on posterior uterine wall the size of an apple. Demented. Operation for removal of fibroid done to exert a curative influence over the mental difficulty, which was probably due to her knowledge of the existence of the tumor. Ovaries and tubes removed and ventro-fixation done, after enucleating the

fibroid. Her physical health improved considerable following the operation, but there was but slight change in her mental condition. About two months after returning home she committed suicide by shooting herself through the head. Operation Jan. 4, 1893.

Case X. Mrs. J. W. C., age thirty-seven ; three children; youngest ten years old. Uterus retroverted and prolapsed ; small cystic tumor of right ovary. Cyst removed and ventro-fixation done. Operation Jan. 9, 1893. The result thus far is very satisfactory.

Case XI. Miss C. M., age twenty-two years. Slight prolapsus and retroversion. Oöphoritis. Found on opening abdomen somewhat extensive adhesions, with considerable congestion of ovaries and tubes. Did not remove either ovary, though I was requested to do so, thinking that after elevating the uterus and with it the ovaries and tubes, the congestion would disappear. Operation Jan. 23, 1893. The result thus far has not been very satisfactory. Considerable pain exists in wound, but I think is subsiding.

Case XII. Mrs. T. S., age fifty years. Complete prolapsus. Operation Jan. 23, 1893. The result is good and no pain exists. There were no adhesions in this case.

Case XIII. Mrs. J. H. M., age forty years. Complete prolapsus. Lacerated cervix and perineum, with endometritis and hæmorrhoids. Very irregular heart, and suffers severely from nervousness. Unable to be out of bed.

I repaired cervix and perineum, curetted uterus and cauterized the hæmorrhoids ; opened the abdomen and removed a large cystic ovary and did a ventro-fixation at the one sitting. She improved very much and was able to go home in about five weeks, but since returning home has been compelled to take to her bed again on account of the nervousness and congestive attacks. During these attacks the mucous surfaces become as blue as indigo and the heart very intermittent. Operation Feb. 6, 1893.

Case XIV. Mrs. E. K., age thirty years. Prolapsus.

Operation March 31. Recovery thus far perfect; no subsequent pain.

Case XV. Mrs. H. B., age thirty-three years; two children. Retroversion, with firm adhesions. Cysts of both ovaries. Unable to be out of bed. Removed ovaries and did a ventro-fixation. Still in the house and gaining rapidly.

Ventro-fixation is still on trial, and it will take years to decide the merits of the operation.

Of the fifteen cases here reported, all made good recoveries from the operation, and at the present time, so far I can learn, the uterus is held up securely in every one; but of the fifteen, five have more or less constant pain in the wound; they are cases I, IV, VI, XI and XIII. This is probably caused by the dragging of the uterus upon the wound. This subsequent pain has occurred mostly in those cases where adhesions were met with, and difficulty was experienced in lifting the uterus up to sufficient height to attach it. I think it will eventually subside.

In conclusion, I will say that from my own results alone I would consider the operation indicated and entirely justifiable in many cases of retro-displacements and prolapse. Whether other operators will concur with me in my conclusion is what I want to know.

THE TREATMENT OF UTERINE FIBROIDS.

BY HENRY T. BYFORD, M.D., CHICAGO.

There are certain facts in connection with the growth of uterine fibroids which we may set down as true, or approximately true, upon which we can base principles of treatment.

(1). Interstitial uterine fibroids are of slow growth and usually stop growing at the menopause.

(2). Extrauterine pedunculated and intrauterine polypoid fibroids, and those that project from the uterine walls (subserous and submucous), show less tendency to stop growing than the interstitial variety.

(3). A multitude of interstitial tumors causes a rapid increase in the size of the uterus, but after a time outgrow, and by crowding each other, interfere with their nutrient supply, stop growing and undergo degenerative changes.

(4). Single tumors show but little tendency to stop growing, and, when interfered with in their development, are apt to undergo œdematous or cystic degenerative changes. The same may be said of two or three nodules developed as an isolated mass.

(5). Cystic fibroids grow in spite of treatment or the supervention of the menopause.

(6). Uterine polypi are curable only by removal.

In treating these tumors we must select our remedies according to the situation and relations of the tumors. There are six different methods of treatment to be considered.

1st. The alterative treatment, which has no effect whatever, and is only successful in those cases that get well without any treatment. It is utterly irrational, and injurious to the health of the patient.

2d. The ergot treatment causes expulsion of the polypi. It diminishes the vascularity of the uterine walls and thus checks the growth of interstitial tumors, and retards the growth of the subperitoneal. By the additional influence of pressure upon submucous fibroids it causes their atrophy, or intrusion into the uterine cavity as polypi. It hastens the spontaneous atrophy of the multiple fibromata. It also acts symptomatically in checking uterine hemorrhage, and often enables the patient to wait for the menopause. It is of great value near the menopause, and is a safe method.

3d. Dilatation, curetting, and treatment of the endometrium may relieve the endometritis and thus check hemorrhage and diminish the tendency to rapid growth.

4th. Electricity in large dosage stimulates the uterus to contraction, and thus acts slightly like ergot. The positive intra-uterine electrode cicatrizes and contracts the uterine cavity, relieving hemorrhage and compressing submucous fibroids. Its action does not extend far from the electrode, as is proved by the fact (demonstrated by Dr. F. H. Martin) that all parts of the uterine cavity contiguous to the tumors must be touched. The negative intrauterine pole liquifies and destroys superficial layers of the tumors, and, in connection with subsequent applications of the positive pole, interferes with their nutrition. Electricity is applicable to interstitial and submucous fibroids that do not project much into the uterine cavity. Subserous and multiple growths and hard tumors, wherever situated, are not much affected. In properly selected cases the method is quite a safe one, although the mortality would be quite large if employed by inexperienced or careless operators.

5th. Removal of the uterine appendages temporarily diminishes the vascularity of the uterus, but acts chiefly by inaugurating an artificial menopause. It can be depended upon in small tumors situated well above the internal os. Tumors larger than a cocoanut, particularly those that have contracted adhesions, are but little affected by it. The opera-

tion is quite safe for small tumors, but is often difficult and dangerous when the parts are displaced and diseased by large ones.

6th. Hysterectomy is, of course, a radical cure. Vaginal hysterectomy for small tumors is quite safe, but is seldom indicated for small tumors unless accompanied by excessive incurable hemorrhage or pain. Abdominal hysterectomy is daily becoming less formidable, partly because of improved methods and technique, and partly because the tumors are, at the present day, not often allowed to become so large as to contract adhesions, or to lift up the broad ligaments and become involved too extensively with the pelvic organs and tissues.

With regard to the treatment of the stump, it may be ligatured and clamped, and fixed into the lower angle of the wound, or ligatured and dropped into the abdominal cavity, or turned into the vaginal cavity through an opening in the anterior vaginal fornix. Or the uterine arteries may be ligatured and the stump hollowed out and sutured or left open. Various minor modifications have been employed, such as covering the stump with peritoneal flaps, or stitching it under the abdominal incision but outside of the peritoneal cavity, etc. Many are now taking out the entire uterus, cervix and all. It is not desirable to discuss here these methods in detail. I will merely state my individual experience as a contribution to the history of the operation. I employ vaginal fixation almost exclusively. Among thirty-four operations done for fibroids there have been two deaths and thirty-two recoveries.* Time can only tell what method will become the accepted one. The statistics of all methods are improving. Abdominal fixation of the stump is perhaps a trifle the safest, but is so often followed by hernia, and has such disagreeable and prolonged after-treatment connected with it, that it must be superseded by the first method that will show as good statistics.

* The author here excludes operations performed for sarcoma.

AN UNUSUAL PLEA FOR GYNECOLOGISTS.

BY H. W. KENDALL, M.D., QUINCY, ILL.

The usual plea of the gynecologists, that they operated upon or removed only diseased structures, has been thoroughly exhausted and needs no defense.

I would propose now that they should remove structures or organs to *prevent* disease.

That any structure or organ not essential to the life of the individual, when functionally erratic and so annoying and uncontrollable as to greatly interfere with rest and nutrition, should be removed, even if there is no evidence of organic change, to prevent certain destruction or serious impairment of the most important part of the human being, "the nervous system."

That constant worry produces instability of the nervous system we all know from personal experience, to a limited extent, and that if unlimited it would be destructive.

The severe grades of nervous instability have for their results the most dreadful ailments that can afflict our race; but it is the lower grades not incompatible with social, business or reproductive life, that causes the widespread moral and civil disturbing effects in all phases of life.

Many a boy has gone to the penitentiary because his hysterical mother has been so impatient and unreasonable with him in the character-forming period of his life.

Many a good man has failed in business, and been wrecked in life and character, because his nervous wife could not allow him to sleep off the worry and fatigue of active life.

The jealousies and divorces that have originated in irritable ovaries, and their analogues, would make an unlimited chapter.

The fruits of such life embraces all the morbid philosophy and theosophy so damaging to each generation.

That the better half of human life should be forced to contend with such worrying existence, is pitiful enough without the responsibility that necessarily follows. If all the hysterical subjects, of either sex, had been sterilized a hundred years ago, governments would now be more stable, human knowledge advanced a hundred-fold, and theosophy, mind-reading, Christian science, melancholy, and mania, except from accident, almost unknown.

Gynecologists have been aware of the great importance of these conditions to church and state and have not done their full duty in trying to limit them; first, because they are not well supported and upheld by the general profession, but rather to the contrary. They are described by the profession as practitioners of very vivid imaginations, innumerable fancies and a *few* facts. This is due to the curious fact that they obtain most of their data from the patients under discussion, four-fifths of whom are neither sane nor insane.

Secondly, they do not adhere to each other, nor to principles and methods well established, if they can find a new name or method of great promise.

As an example, the late Marion Sims was almost ignored by his fellows, long before his death, and was actually expelled from the hospital that he gave his best days to establish. Yet a more liberal minded, unselfish, beautifully intelligent, lovable character never graced our profession.

His instruments have never been improved upon; yet few of them are in use to-day,—nearly all replaced by clumsy substitutes. His principles of uterine and plastic surgery have not been improved upon, but have been supplanted by a multitude of shabby imitations. This want of substantial, permanent accord has an unlimited bad effect upon the un-

happy patient, who should be supported by continuous faith and unclouded by a single doubt or debate.

The pathologists, usually friends to all, cannot find distinct lesions enough to make them urgently friendly and are no more useful here than to the alienists, in whose cases the most dreadful symptoms, coming in storms of violence and terror, subside into death and leave no imprint or footstep to guide the pathologist.

If the smallest tack in a boy's foot can produce lock-jaw, and leave no trace post mortem, or if the slightest varicocele prostatitis or cystic orchitis can so transform a man that every physician would rather shun him than try to unravel his symptoms and prescribe for him, what must be the condition of the nervous system of a woman well started on the pathogenic cycle by specific or septic poison, or catarrhal inflammation, or mechanical violence, in her complicated delicate structures, bearing in mind the fact that all these conditions must be aggravated by exacerbations and excitement every twenty or twenty-eight days?

Then these chronic inflammations are located in complex erectile tissue, surrounded by a most intricate and extensive nervous expansion, that must govern all the regenerating nutritious forces.

Then attach to all this chain the daily round in showers of violence upon the central nervous structures, called hysteria, with its worry, unrest, and frantic fears and forebodings, can cure be less than a miracle?

Have we positive evidence that particular organs or tissues, through diseased conditions or perverted functions, can produce the multiform symptoms of this disease? not always pathological evidences that remain post mortem—nor can we in a nasal catarrh, violent enough to produce spasmodic asthma—but we have more than evidence—positive proof—in the fact that all these phenomena cease after the menopause, if no structural changes have taken place in brain or ovaries. I believe it is the rule with all erectile tissues that

death terminates the evidences of disease, which shows that in some mysterious way these structures are the connecting links between nerve and blood. It is my opinion, reiterated, that all structures or organs not essential to life, whose functional derangements are persistent and intractible, that produce unrest and distress and diminish nutrition for one year, ought to be destroyed; sooner, if evidences of danger to the integrity of the central nervous system appear, such as loss of self-control, of memory, sleep, and rapid emaciation.

When our most excellent and reliable gynecologist said that "there was no such condition as inflammation of the pelvic viscera," we all, amazed, answered that there were many grades of *something* that we knew by that name, and in the discussion the discovery was made that certain conditions of the vasomotor forces can simulate all the conditions of inflammation, and that these blushes or flushes, from whatever source they come, can produce such profound shock to the nerve centers that the result would be insanity if permanent—epilepsy, if evanescent and recurrent. When the repetitions are frequent, until self-control is gone, it *is* mania. Even now, in the last phase, permanent lesions in the brain may not occur, and operation to remove the motor aura might result in cure, but when intermissions cease, hope is gone.

Now, my repeated pleas, that, as the gynecologists deal with a peculiar class of patients (four-fifths of whom are neither sane nor insane, but who occupy every atom of space between these two conditions), they should be untrammeled by the doubts and fears of such patients, as they are reflected from the family physician, or by the interference of the general profession, or of the church or state.

The line of demarcation between general surgery and gynecology should be as sharp and definite as between medicine and surgery.

The gynecologists should be authorized and upheld in deciding the mental, moral and social questions that arise in such

cases as to the endurance and well-being of the patient, her friends and the community.

As the statistics of all countries show that over sixty per cent. of all lunacy originates in hereditary predisposition, is there not a very broad field for preventive measures?

Confirmed hysteria ought to be a bar to matrimony, or, at least, to productive matrimony.

If the earliest approaches of vaginitis, metritis, and salpingo ovaritis, soon to be followed by chronic pelvic peritonitis, are shown plainly by the different grades of hysteria, ought there not to be efficient means used to abridge this long chain of conditions and limit the number that are totally wrecked?

In my mind, a universal cause produces a majority of cases—*faulty dress.* Girls are not properly dressed from the waist down; they are practically exposed naked to all the changes of temperature.

They have catarrhal vaginitis, metritis, salpingitis, ovaritis, and pelvic peritonitis; then, from obstructed portal circulation, gastro-hepatic neuroses, etc.

Think of all this concatenation of horrors inside the network of the most sensitive nervous expansion in the body,—this system, that superintends the whole function of nutrition and preservation of life. Could the imagination picture anything more harrowing to the thought, let alone the endurance of the victim.

The shape of the abdomen, with the bronzing of the skin, and its granulated appearance peculiar to ovarian tumor cases, attends this grade of subacute pelvic peritonitis—much more common than suspected.

The mental condition is peculiarly pitiful. They cannot enjoy the pleasures of *this* world, so they creep as close as possible to the confines of the *next.*

I will not give you a history of cases, for every one can make these to suit himself.

Gynecology has always nursed too many fads. The no-

tion that operations cannot be performed at or near certain periods is one that the experience of any surgeon ought to correct, when he remembers the thousands of operations after accidents and their results.

Floating kidney has given me a world of trouble until Formad (the second man in the world who never told a lie) emancipated me by saying that it was a normal condition in the female, and it then occurred to me that it was a wise provision of nature to guard them against violence in the advance of pregnancy.

In the discussions about operative procedures we are sometimes led to believe that almost everything depended upon the ligature and suture, and every substance, from a leaden wire to a rat's tail, has been experimented with, and the consensus of opinion is that all have faults — silk having but one (and this I think I have found a remedy for)—its slow absorption. With this corrected, it is a *perfect* ligature. If the silk is boiled for twenty minutes in a five per cent. solution of hydrochloric acid it will be, in twenty days, perfectly absorbed. Longer boiling or a stronger solution hastens its absorption. The responsibility in such operations as fall to the lot of the gynecologist (a chief object in this plea, looking to the best security of patient and surgeon), must be made by the general profession's sustaining good will and encouragement.

If we had no politicians in our profession to control our associations, to influence courts and meddle with public institutions, a general accord might easily be reached. Much that is often successful is yet tinged with the suspicion of the experimental ; but while thousands annually commit suicide, for some unknown serious cause, why not permit the surgeon to do this for them in hunting the cause, if reason or experience can find a well-grounded *theoretical* cause?

Three years ago a patient of mine, insane over a year, who had been suffering from a general specific rheumatism and hydrops pericardia, fired a pistol ball through his heart

and still lives. From that moment he has been sane. If I had tapped the pericardium the result would probably have been the same, but rapid death might have given me a lawsuit.

Electricity, which has promised so much and accomplished nearly all that it has promised, has become a cause of debate and litigation. We thought it would be a sure cure for fibroids, yet it is not. It does much, but it does not remove the growths. I have had a fair opportunity to test it thoroughly, with the tumor fully in sight, and could not lessen or retard its growth, though I used every form of current up to two hundred milliamperes. For relief of pain and hemorrhage, with or without escharotic effect, I have found it perfectly satisfactory.

I am sorry that I have had so little to say to you except my own thoughts and experiences, but all great causes are decided upon individual testimony. If, after mature consideration, you will all cease to decry operations, and urge their more frequent performance, and join me in the belief that every case of chronic hysteria, epilepsy, or mania, originating in hysterical worry, pain or unrest, should have ovariotomy, I shall be glad that I have said this much.

CATHETERIZATION OF THE FALLOPIAN TUBES.

BY O. B. WILL, M.D., PEORIA.

In a paper read at the last annual meeting of this Association, I alluded to some personal experience in the direction of catheterizing the Fallopian tubes, or, more accurately speaking, making direct medicinal applications to the interior of those appendages. The subsequent interest and favorable comment elicited, together (particularly) with the wide-spread disbelief in the possibility of such procedure, revealed by investigation into the literature of the subject, have impelled me to a further brief consideration of the matter at the present time.

In the course of my experimental ventures, I had no thought of experiences either specially unique or particularly novel, seeming to consider the procedure a natural result of an acceptance of the modern theory of contagion and continuity as applied to the etiology of tubal disease, and antisepsis and drainage in their therapeutic relationship. I was surprised to find, on investigation, so great a dearth of literature on the subject. In all the leading authors, society transactions and periodical literature at my command, nothing whatever is even hinted on the subject, except in Dr. Henry C. Coe's article on Anatomy of the Female Pelvic Organs, in *The American System of Gynecology*, in which he says, briefly, "catheterization and cauterization of the tubes, as proposed by Tyler Smith and Frosiep, are of course of no practical value, not to speak of the difficulty and danger of the procedure," and in the great work of Pozzi, in which the author makes this reference to the matter:

"Is it possible to pass the sound into the Fallopian tubes? This is the explanation of some authors in those cases where the instrument penetrates deeply into the abdomen and can be detected through its wall. That this may occur there must be a combination of very unusual circumstances: a latero-version of the uterus which brings the orifice of the tube into the long axis of the cervix and an exceptional wideness of its opening. This condition actually existed in a case observed by Bischoff, and was verified after death following ovariotomy. But in almost every one of the published cases of pretended sounding of the tubes, it is far more likely that there was a perforation of the uterus—a condition which is easily produced without exaggerated efforts when the uterus is softened and thinned from pregnancy or recent abortion, or when it is displaced; the benign character of such wounds has surprised most of those who have witnessed their production, and has induced them to seek an explanation which appears more plausible. This is, without doubt, the significance which must be given to two cases recently reported by Gonner, of Basel. Finally, we may note the possibility of establishing permanent false passages and the introduction of the sound by the same route into the abdominal cavity. But these are, in truth, but pathological curiosities, with which we have little to do." Thus it will be seen that the author of that work expresses his doubts not only as to the reliability of evidence offered, but as to the possibility even of such procedure, except as revealed by post-mortem examination. If the latter opportunity had never manifested itself, he would probably never have accepted the evidence of the observer quoted in that connection. If the circumstance, indisputably proven, occurred once, may it not occur a second time, and if so, a third, and so on, as attention be more particularly turned to the matter? Facts are often times not discovered, simply because they are not sought for. The fact that the normal uterus and appendages present positions and conditions usually not favorable to the passage of a foreign

body into their cavities, does not militate against the possibility of differing conditions in cases of disease and mal-position. Whatever may be the published or unpublished experience and views of others, however, I feel that I am in a position to take successful issue with those who think the difficulties of the manipulation insurmountable and the procedure impractical. There is not the least particle of doubt in my own mind as to the accuracy of conclusion of those who have reported accidental entrance of the sound into the Fallopian tube. I feel that I might go still further, and say with a degree of propriety equal to that of the author quoted, that the instances of perforation of the uterine wall without apparent effort were in all probability instances of unconscious catheterization of the Fallopian tubes. To my mind, one insinuation is just as fair and well-founded as the other.

As many as fifteen years ago, whilst endeavoring to outline a submucous fibroid growth of the uterus I found my sound pass at once to an unusual depth, and in great trepidation and alarm I put my patient to bed, fortified with opiates and prospective cold applications, under the impression that a perforation of the uterus had been made and peritonitis was to be feared. There was no development of inflammatory symptoms, however, and I classed the case in the category of those referred to in the author herein quoted, considering it an evidence of the tolerance manifested by the, at other times, intolerant peritoneal tissue. There was not even pain, and the patient persisted in the declaration that there was nothing the matter with her and would not remain quiet. Some time later, in a case of hemorrhage, a similar occurrence took place with respect to the passage of the sound, without any resulting untoward symptoms, although the patient was not put to bed but only admonished to keep quiet and report at once the development of pain or the like.

About four years ago another case presented itself in the person of Mrs. K., a butcher's wife, large and stout, who had not been pregnant for a half dozen years, although anxious

to become so and desirous of knowing the reason for her barrenness. I passed a small sound, quite gently, and was surprised to find with but slight manipulation the instrument largely disappear in the direction of the left cornu and evidently enter the abdominal cavity. Somewhat startled, I at once withdrew the instrument, with perfect ease, and inquired of the lady if she had suffered any pain from my manipulations. She assured me that she did not, and after picking up more courage and giving the matter some thought, I re-introduced the sound, not only into the uterus but likewise to a greater distance and in the same direction as before, and with equal ease and freedom from pain or distress. Somewhat emboldened by the apparent harmlessness of the venture, I cautiously manipulated the instrument with one hand, and with the other both internally and externally, satisfied myself that I had succeeded in introducing the sound into the left Fallopian tube. The woman left my office and returned to her home as well as usual. When she again called, at my request, my curiosity led me to a still further trial of the matter, with a like result, and the additional one of passing the small sound, with some difficulty, however, into the right tube as well. This passage of the sound I have repeated a number of times in this patient, completely establishing the perfect feasibility, in some cases at least, of catheterization of the Fallopian tubes. This patient is yet within my reach, and I can demonstrate on her, to the satisfaction of any one, I think, the possibility of introducing, in certain cases even a large sound into the Fallopian tube, through the normal uterine passage, and with little more than the slight curve usually characterizing the uterine sound. In the instance just mentioned the uterus is large, straight, somewhat retroverted, and the cervical canal large and roomy. The patient has never become pregnant.

One other marked case of this type came under my observation about one year and a half ago, in the person of a Jewess who at that time suffered from all the evidences of a

tubal pregnancy. Menstruation had been suppressed for three months, and the enlargement, plainly distinguishable in the right uterine cornu and broad ligament, satisfied me that I had to do with a *partial* extra-uterine pregnancy. Hemorrhage, fitful in character, soon supervened and increased with such rapidity and severity finally that I was obliged to dilate the uterus and remove from its right cornu and tube-entrance what proved to be the product of conception, with closely adherent placenta partly projecting, as I think, into the tubal cavity. At all events, a large uterine sound could be easily passed into the tube, and a smaller one with comparative readiness into the left one. The same manipulation can be accomplished at the present time, as I yet have the patient under my care for a constant discharge, evidently emanating from the right tube and dating from the period of the pregnancy just recounted, and which I have thus far been unable to wholly control even by the use of the injections of peroxide of hydrogen readily administered, but which pass into the peritoneal cavity if used in quantity, occasioning some pain and distress.

I have no doubt that some of my experience has been duplicated in the observation of others, and hope that this account may serve to bring out such, even if a supposed mistaken diagnosis, or timidity in the face of authority, has thus far prevented any mention of it.

Since the experiences detailed, I have sought to embrace nearly every suitable opportunity to try the experiment of catheterization, and particularly so since the practice of uterine drainage and therapeutic antisepsis. In a fair proportion of cases I have been enabled to do so successfully. I not only make this claim, but stand committed to a willingness to demonstrate the feasibility of the procedure, in suitable cases, to the satisfaction of any one who cares to take the pains to corroborate what I say by personal observation.

All medical men will perhaps acknowledge the demonstrable egress and ingress of fluids in relation to the patulous-

ness of the utero-tubal opening. What, then, is there to hinder the introduction into such opening of a suitably sized instrument? In a direct way manifestly only the normally small diameter of the meatus. If this obstacle can be overcome in any way, serious interference with the procedure can be expected only in one or both of two directions, viz.: the possible existence of a valve-like membranous closure, or such relation of the angle of tubal insertion to the entrance-axis of the uterus as to make the cavity of the tube inaccessible, no matter what its lateral dimensions.

Let us consider this matter for a moment. The regular triangular shape of the uterine cavity is presented, with the uterine as at one, and the respective tubal openings at the other two of these angles. There is no special difficulty, even in strictly normal uteri, in reaching either tubal angle through the cervical opening. The only possible hindrances then to the procedure under consideration are those just referred to. That they are not always present is evidenced by the observations of myself and others, just detailed. That they may be in many cases artificially overcome is equally demonstrable. The variation in size of the tubal meatus in different individuals, and under differing circumstances and conditions, and the mobility and adjustability of all the organs concerned, including the dilatability of the uterine os renders it possible to temporarily adjust positions, and harmonize axes to an extent equal to most emergencies.

It is unnecessary in this connection to go further into a description of anatomical conditions with which all intelligent physicians are familiar.

On subjecting a patient to the ordeal of an at least attempted catheterization of the Fallopian tubes, I am in the habit, as stated in my former paper, of first passing a small-sized sound, and with its bulbed point locate the ultimate limit of the tubal angle of the uterus. This is followed by the injection tube of a Molesworth uterine dilator, which I found in extremity to be a very efficient instrument for the

purpose, bent to correspond to the shape of the withdrawn sound. This tube is made to follow the mental calculation as to direction, marked out by the sound. If no entrance can be readily effected, a calculation, based upon careful examination of relative positions must be made as to the necessity for dilating, or trying to change the relationship of the uterus so as to admit of a proper adjustment of opening to opening. In at least a fair proportion of cases care and perseverance will be rewarded by a success demonstrable in all fullness by the injection of some innocuous fluid that will either distend the tube to an appreciable extent, or occasion an abdominal pain of sometimes circumscribed and at other times diffused character, but harmless. Really, one who has never tried it will be astonished to find with what ease entrance can occasionally be made, particularly in some cases of relaxed uteri and profuse though simple leucorrhœal discharge. It is not claimed that this desirable accession can be secured in all, nor even in a majority of cases, but only that there are many in which the procedure can be accomplished, and that, too, from a therapeutic point of view. In fact, the practical value of these observations lies in their therapeutic relationship; and that does not necessarily mean either free drainage, cauterization, or the introduction of dangerous medicaments. It means more in the line of modern therapeutics and specific medication. It means sterilization in the sense of the exclusion or destruction of morbid entities and products; etiological factors of continuous septic infection and diseased tissue-change, and subsequent reliance upon the restorative energy of the natural processes. It means a rational and conservative therapeusis in which is recognized the legitimacy of drainage and other antiseptic precautions in the treatment of diseases of the endometrium, and the logical sequence of following diseased conditions beyond that boundary into a well-recognized field of morbid activity.

My observations in this direction have not as yet carried me very far. Two classes of cases, however, clinically

speaking, I have been enabled to treat with the greatest satisfaction by catheterization and injection into the Fallopian tubes. Where there exists a persistent leucorrhœal discharge of catarrhal type, even in unmarried women, where even intrauterine medication fails to control, I have been enabled to stop it entirely by the use of injections of peroxide of hydrogen into the Fallopian tube ; for the fact is demonstrable that it is in just this very class of cases that the tubal meatus is found to be most patulous. It is not necessary that the injection tube be introduced more than through the isthmus in order to accomplish the desired purpose. Beyond that point the increasing diameter of the tube readily admits of the exudation of the peroxide through the small eyelets near the end of the tube. The other class of cases referred to is that in which we find intermittent discharges of pus from the uterine cavity. Those cases in which the patient gives a report of more or less frequently recurring "ruptures" of "ulcers" or "abscesses,"—"breaking" of them, as they sometimes say. Unquestionably these are cases of pyosalpinx in which the distal extremity of the tube has been closed by adhesions, whilst the uterine end is yet not sufficiently occluded to bear the strain of accumulating pus. In my experience a goodly number of these cases can be successfully treated in the manner indicated, in combination with other conservative measures that might be dwelt upon. Of course, where much disorganization is present, or a series of cavities are formed, or where the ovary itself is diseased to the extent of disorganization, no reliance should or can be placed upon the procedure now under consideration. What I wish mostly to impress upon my hearers is this: That the Fallopian tubes are far more frequently amenable to catheterization than is generally supposed, and that therefore, in the light of modern therapeusis a persevering and intelligent study of the subject will do much to remove one of the opprobia of medical art and add laurels to truly scientific conservatism.

DISCUSSION.

Dr. H. W. Kendall, Quincy:

I have performed catheterization of the Fallopian tubes on numerous occasions, and in any case where the os uteri is sufficiently dilated it can be done easily unless there is adhesion of the tubes or displacement of them. I have long thought that the siphon-like action of the Fallopian tubes was the reason why abdominal dropsy is five times more common in the male than female.

CONTRACTION OF THE CERVIX UTERI UPON THE NECK OF THE FŒTUS, A SOURCE OF DANGER TO THE LATTER AND A FREQUENT CAUSE OF THE PROLONGATION OF THE SECOND STAGE OF LABOR.

BY CHARLES W. ROOK, M.D., QUINCY.

The history of a few cases will best illustrate the purposes of my paper.

Nov. 1, 1885, Mrs. M. W. was confined. The first stage of labor was normal, the liquor amnii escaping freely as the occiput passed the os uteri. Half an hour later there was, notwithstanding the occurrence of strong and frequent expulsive efforts, no apparent advancement of the occiput. A careful examination revealed a peculiar action of the uterus, the explanation of which we learned later. During the acme of an expulsive effort, it was observed that the occiput, instead of pressing upon and distending the perineum, was sufficiently elevated or retracted as to permit the free passage of the examining fingers between the occiput and perineum. The vigor of the fœtal movements having markedly decreased, it was thought best to hasten the delivery. The forceps was applied and firm traction employed without in any way advancing the occiput.

On the removal of the forceps, the examining hand was carried by the head to the neck of the fœtus, which was found so closely encircled by the rigidly contracted os as to prevent the farther introduction of even one finger. Profound anæsthesia was now induced, the forceps re-applied and firm traction employed, which caused the rigid os to relax and permit

the passage of the shoulders and the completion of labor. Several minutes were employed in resuscitating the infant, the tissues of whose head and neck down to where the latter was encircled by the os, were very darkly congested.

Feb. 22, 1886, Mrs. V. was confined. She was in the care of Dr. E. who called me to aid in the delivery. The left foot lay in the vagina, with the fœtus in the left sacro-anterior position. The liquor amnii having drained away, the right foot was brought down by its fellow and the body and arms delivered with but little difficulty ; but the os uteri closed upon the fœtal neck, thus greatly endangering the life of the fœtus. After much perseverance the forceps was applied and the head delivered.

Though much congested the infant quickly revived.

Aug. 19, 1888, Mrs. A. P. was confined. She was in the care of Midwife Mrs. B., who informed me that, "The os had been fully dilated for three hours and ergot freely administered, and that there was no appreciable movement downward of the vertex."

Patient was anæsthetized and the rigidly contracted os uteri found closely encircling the fœtal neck, with the head in the left occipito-anterior position. The forceps was applied and delivery promptly effected, though all efforts failed to resuscitate the infant. The deeply corrugated and congested tissues of the head indicated that death was due to prolonged cervical constriction.

Dec. 5, 1889, Mrs. J. M. was confined at full time of a macerating fœtus of about eight months development. She was in the care of Midwife Mrs. H., who reported that "Patient had been in labor for two days and that even ergot had failed to produce pains strong enough to expel the fœtus." The perineum was absent, not having been restored from a severe laceration received at a former labor.

The vagina was occupied by the greatly elongated cervix uteri, which would, during the acme of an expulsive effort,

extend three inches beyond the ostium vaginæ. The os uteri was sufficiently patulous to admit the introduction of the examining finger which found the amniotic sac ruptured and the head at the lower straight of the pelvis. After inducing anæsthesia, the cervix uteri was digitally dilated so that the forceps could be applied, then working in conjunction with the expulsive efforts, the head was soon brought outside the vulva, but remained covered by the previously elongated now distended cervix. The os uteri, where it encircled the shafts of the forceps blades was in the form of an elipse, but on the removal of the forceps assumed a circular form about one and a half inches in diameter. As the fœtal head had passed the ostium vaginæ, though still enveloped by the distended cervix, the latter's subsequent action, until the completion of labor, was under visual inspection. The commencement of an expulsive effort would be announced by a slight contraction of the os which would relax by the time the fundus became firmly contracted.

The expulsive efforts being insufficient to rapidly dilate the os, the latter was dilated with the fingers to such an extent as to permit the passage of the biparietal diameter.

The os, adapting itself to the contour of the lower portion of the head, gradually and firmly closed upon the neck of the fœtus. After some minutes' delay, during which the rhythmic contractions of uterus began and ended as stated above, the os was a second time dilated for the passage of the shoulders, after which, it closely followed the contour of the escaping body and extremities, and closed upon the funis, necessitating a third dilation for the removal of the placenta.

These cases have been selected as typical illustrations of the condition under consideration.

Although occasionally the cause of the death of a fœtus, and often the cause of prolonged maternal suffering, this contraction of the os uteri upon the neck of the fœtus is, under conditions frequently obtaining, physiological and not pathological.

If the amniotic sac ruptures at or before the completion of the first stage of labor, and the presenting part fits not the parturient canal with an almost valve-like nicety, there will escape an excess of the liquor amnii, thus diminishing the volume of fluid that should surround the fœtus, from the biparietal diameter of the head to that of the bisacromial, and prevent the elastic tube-like contraction of the os upon the fœtal neck. It is as physiological for the os to close upon the neck of the fœtus, after passing the biparietal diameter, unless prevented by the volume of liquor amnii surrounding the fœtal neck, as it is to contract upon the funis after the escape of the fœtus. It is as physiological for the circular fibres of the cervix uteri to cause the latter to adapt itself to the contour of the fœtus unless prevented by the liquor amnii, as it is for the circular fibres of the intestine to adapt itself to its contents. Being of the same variety of muscle fibre as the intestine, and deriving its nerve supply from the same source—the sympathetic—there is therefore no essential difference between the rhythmic peristaltic movements of the uterus and intestine.

The following quotation, from Lusk's Science and Art of Midwifery, Edition of 1882, page 137, touches the subject under consideration. He says, "The normal dilation of the cervix is, however, by no means a matter of pure mechanical distension.

"If the canal which forms the communication between the vagina and the uterus were simply an elastic tube, it would of necessity retract down upon the neck of the fœtus after the passage of the head, and thus a new distension would be required to permit the passage of the shoulders. Indeed the conditions of an elastic tube are not unfrequently realized in versions, where an attempt is made to extract the fœtus through an imperfectly dilated os; in which case, after the disengagement of the shoulders, the cervix is apt to close upon the neck, and arrest the delivery of the after-coming head.

"That this complication does not happen as a rule is due to the fact that in natural labors the mechanical expansion is associated with certain organic changes which render the cervix soft and distensible, and at the same time diminishes its retractility."

Notwithstanding the above quotation, the writer holds that the cervix uteri partakes very largely of the attributes of an elastic tube, and that these attributes will be manifested more or less markedly upon every occasion when the condition before referred to obtains. Professor Lusk admits the frequency of this elastic tube-like contraction of the cervix in the case of versions, but does not, I think, present the true reason for its occurrence. After the shoulders pass the os uteri and before the biparietal diameter can engage in the same, the volume of fluid surrounding the fœtal neck escapes, thus permitting the cervix to contract more or less firmly upon the after-coming head. We further hold that in normal labor there occurs in the distension of the cervix uteri no more organic change than occurs in the distension of the sphincter ani in deffication, the acme of intestinal peristalsis as labor is the acme of uterine peristalsis.

Recognizing not only the possibility, but also the probability of the cervix uteri contracting upon the neck of the fœtus during the second stage of labor, will enable us, by prompt instrumental interference, to prevent much maternal suffering and occasionally preserve the life of a fœtus.

DISCUSSION.

Dr. A. J. C. Saunier, Chicago (opening the discussion):

May I ask Dr. Rook one question, that is, how much influence does ergot have in producing the condition of which he speaks? It has been my experience to have such cases come under my observation and care several times, in what would otherwise have been normal labor, where ergot had been used to excess. I may be mistaken about it, but I have come to think that ergot in the majority of cases of normal labor is useless. The less ergot the

less spasmodic contraction of the cervix. The question arises in my mind, how many cases may be due to the action of ergot?

DR. ROOK:

In the two cases where I was called by the midwife, ergot had been freely used, but in the case occurring in my own practice it was not used.

DR. L. H. CORR, Carlinville:

The doctor made the sweeping assertion that he had no use for ergot in obstetric practice, if I understood him correctly. I would like to have him tell us why. We know its physiological action, and would like to know the cases in which he would use it.

DR. ROOK:

In answer to the doctor's question, I should say that during the continuance of labor until its completion that ergot is not indicated, and even not after the completion of labor unless it be for the control of hemorrhage, and then I think hot water is as good if not better than ergot.

DR. CORR:

I take issue with the doctor on that point. I have never, in my short experience of nineteen years, given ergot in my obstetric practice and regretted it. Of course, the physician should use it judiciously. We know its physiological action on muscular fibre, and when I have used it in the after lying-in stage I have never regretted it, because we have so many after results, such as an enlarged and flaccid condition of the parts, and a prolonged lochial discharge resulting in leucorrhœa afterwards. I would consider it our sheet-anchor to prevent that in the practice of obstetrics. We surely want to use it somewhere, and I do not think the Society generally will agree with Dr. Rook in the positions he takes.

DR. KENDALL:

I think the doctor is correct in the position she takes. During an experience of thirty-eight years, in my obstetric cases I have left my patients feeling comfortable if I gave a large dose of ergot, especially where I thought hemorrhage might occur.

DR. ELIZA H. ROOT, Chicago:

In discussing the subject of the use of ergot during labor, I should say that hot water will do all that ergot does, and in my experience, where it has been demonstrated, its physiological action is more strongly effective on the lower circular band of fibres of the uterus, even after the third stage of labor. In cases of hemorrhage there is nothing like hot water applied to the cervix or in the

form of an intra-uterine injection. In the case that Dr. Corr speaks of, in regard to ergot preventing the lochial discharge, I believe that judicious intrauterine injections would be more effective than the action of ergot. I believe we sometimes have sepsis following the administration of ergot from this cause, namely, contraction of the lower fibres of the uterus and shutting in material that should be evacuated from the cavity of the uterus. That has been my observation in a series of cases, and ergot has been almost expunged from the ward over which I have charge. It is not given for the reasons the doctor has mentioned in his paper. I use hot water in preference to it, and I find my patients get along nicely. The lochia is not excessive and convalescence is all we could desire.

PROLAPSE OF THE FEMALE PELVIC ORGANS.

BY HENRY PARKER NEWMAN, M.D.

It is my desire to call attention, briefly, to prolapse of the female genital organs, with particular reference to their hernial nature; regarding them as having a similar etiology, and the same pathological significance, as hernias in other situations, and amenable to analogous lines of treatment.

The classic divisions of hernias into cephalic, thoracic, and abdominal, is incomplete without the addition of the important group comprised in the title of this paper; and, in view of their frequency and importance, they should enjoy an individual classification in herniology.

For accuracy and convenience we would designate four major classes: cephalic, thoracic, abdominal, and pelvic hernias.

The etiology of these affections in general comprise such predisposing and exciting causes as defective development, including malformations and inherited tendencies; depraved muscular tone, through debilitating disease; and trauma.

While the majority of cases are generally attributed to traumatism, this may often in itself be the result of defective development, inherited or acquired weaknesses, or malformations.

Again, defective development represents not only the malformations of fœtal life, but the results of arrested growth at the period of ripening, or puberty.

Nature aims to furnish, at birth, suitable rudimentary pelvic organs, and it is exceedingly seldom that she fails to do so.

In the interference of artificial influences with the natural formative conditions of puberal activity, is to be found the proper explanation of many abnormalities of development.

It is an error to designate them as fœtal malformations. Under existing conditions of custom and education, the female pelvis, with its complex mechanism and its importance to the race, receives altogether insufficient recognition and conservation during puberty and adolescence.

Consequently, it is too poorly fortified against the demands made upon it during menstrual and child-bearing epochs.

In the face of our boasted civilization and enlightenment, we must admit that the representative of budding womanhood who is addicted to corsets, heavy skirts, and high-heeled shoes; lives on hot bread, pastry, pickles, and sweetmeats; and, in our cities, is in the highest grade at school, up six flights of stairs, and burns the midnight oil in pursuit of knowledge or pleasure,—is not the exception, but the rule.

She is either ignorant of, or oblivious to, the fact that she is possessed of an important set of generative organs which will probably be called upon one day to fulfill the purposes of their being, and that the proper performance of their future functions depends largely upon the general health during the crisis of development.

Rational treatment, therefore, of most gynecological diseases may begin before the affection has reached the surgical stage.

This is particularly true of pelvic hernias.

An ounce of prophylaxis is worth a pound of pessaries.

The general practitioner, the family physician, has his opportunity before the specialist, and it is for him, when opportunity affords, to urge upon the parents and guardians of young girls the necessity of attention to the regimen of the actively formative period of puberty.

Good food, sensible dress, a proper interchange of exercise and rest,—insist upon these things, general practition-

ers, for the sake of humanity's ultimate good, even if you take some bread out of the mouths of the specialists, into whose hands most neglected cases drift. The humanitarian gynecologist can well spare it. But it is not probable that his entire revenue from this source will be summarily cut off.

There is another factor in the production of certain forms of pelvic disease, which will furnish enough of its own victims to "keep hot the pathway to the office of the gynecologist," to quote an apt expression from a writer in a western journal.

I refer to trauma in child-birth, and some of the prevalent evils of puerperal management, which render the normal process of reproduction a formidable menace to the after-health of the parous woman.

Many women whose puerperal histories go to make up some obstetrician's brilliant percentage of recoveries, have escaped (by the grace of God, and through no fault of the accoucheur's) with their lives, but with wrecked constitutions and dismantled pelves.

These cases, with subinvolution, torn pelvic floor, loss of tonicity of uterine and vaginal supports, furnish frequent examples of all degrees of pelvic hernias, and a strong argument in favor of preventive therapeutics.

In a former monograph I have referred to the excellent results to be expected from direct professional supervision over the entire period of gestation, from the earliest months to the completion of labor.

But the consideration of prophylaxis in pregnancy, child-birth, and the puerperal state, is not the object of this paper.

I have wished simply to indicate its relation to downward displacements of the pelvic contents, and would emphasize the fact, once more, that it is easier to prevent such conditions than to remedy them. Guard against the possibility of ruptures and lacerations during labor; repair at once such as are unavoidable, use every effort to secure proper involution and

a return of constitutional tone and muscular vigor as far as consistent with a normal puerperal state.

For the actual existence of pelvic hernias,—cystocele, rectocele, prolapse of uterus and vaginal walls,—prognosis and treatment depend upon the nature, degree and duration of the condition.

Much may be done in all cases—minor cases of recent origin may sometimes be cured—by systemic treatment, attention to regimen, tonics, massage, faradics, local astringents, and removal of weight and constriction from the abdomen, with the view, in all cases, of encouraging the retentive power of its walls.

Proper action of the pelvic diaphragm is essential to the healthful condition of the pelvic viscera. This cannot exist with constriction at the waist, or any impediment to free abdominal respiration.

All local treatment has for its aim the restoration of the prolapsed organ, and its retention in the normal position.

A hernia is a surgical disease and calls for surgical treatment, which admits of wide interpretation, and includes all mechanical means, from simple air-pressure and gravitation in postural treatment, to the radical operation of removal of the offending organ.

Simple restoration can usually be accomplished by taxis, preferably in the genu-pectoral position.

Exceptional cases, such as uterine prolapse with inversion, hernias with adhesions or incarceration, may prove irreducible, and require special treatment, palliative or radical, as best suited to individual indications.

The retention of the replaced organs is not always an easy matter, and calls for great judgment in the selection of appropriate methods.

The simple tamponnade, combined with astringents and medicinal agents is extremely useful as a palliative measure; and in the treatment of complicating disorders, as chronic congestions, hyperplasias, and inflammatory exudates.

But we can hardly expect permanently gratifying results from their use, except in recent and minor cases. The same may be said of most other therapeutic agents and mechanical appliances, including the much-abused pessary. The idea of both pessary and tampon is based upon the supposition of auxiliary pelvic support for its retention. This is, unfortunately, just what is lacking in most cases, and steps must be taken for its restoration before either can be satisfactorily used.

The operation of perineorrhaphy, as done to-day, is simple in technique, quickly performed, and efficacious in restoring the perineal body, and even where the laceration is complete, is rarely followed by any but good results, if done for rectocele or prolapse of the posterior vaginal wall.

In the same way the various colporrhaphies are most excellent in their sphere, that of reducing the volume of relaxed and prolapsed vaginal walls, but we mistake the pathology when we regard colporrhaphy as quite analogous to perineorrhaphy.

The latter removes the cause of the affection for which it is done, while the former may, or may not, do so.

In the one instance, we operate upon a substantial body, capable of sustaining the prolapsed viscus which had escaped by reason of laxity or laceration of that body; while in the other we have to deal with simple mucous membrane which, sooner or later, must again yield to the same opposing forces, unless the causes are removed.

It is even more fallacious to expect simple constricting of the vagina to remedy a hernia of the uterus without any attempt to restore the anatomical relations of the parts, particularly the correct angle of uterine and vaginal axes.

A large and heavy uterus, with its abdominal supports weakened and stretched, and with its fundus and cervix perpendicular to the pelvic canal, will soon burrow its way through the cicatricial vaginal tissue, by its own weight, supplemented by the vis-a-tergo of intra-abdominal pressure.

This tendency can be happily averted,—first, in some instances by simple amputation of the cervix; second, by various operations for bringing the uterus forward in its normal anteverted position.

With ventro-fixation and shortening of the round ligaments, I have been able to accomplish the restoration of the retroverted organ, and I believe these have more to recommend them than the several vaginal operations, such as Durhssen's, Shucking's, Mackenroth's and others.

Ventro-fixation is indicated, and is the only practicable operation, unless it be total extirpation, where adhesions of any considerable extent exist.

The Alexander-Adams operation is founded upon the principle, not of suspending the uterus, but of using the round ligaments as guy-ropes to steady the organ in its normal anteverted directions, and bring it into auxiliary relation with the natural retentive forces of the abdomen.

The operation is simple of accomplishment, may often be done without general anæsthesia, and has given me such uniformly satisfactory results, that I heartily recommend it to those who desire to master its improved technique, which I have already detailed in former publication.

In conclusion, I would re-emphasize these points:

(1). Pelvic herniæ should be recognized and classified as such, and not as diseases of the uterus and adnexæ, and their treatment should be based upon hernial pathology.

(2). Prophylaxis in the formative stage of puberty, as well as in pregnancy and labor, is of the utmost moment in this class of diseases.

(3). Operations upon the pelvic floor, or vaginal walls, while indispensable in their place, cannot be relied upon, alone, to cure all herniæ of the pelvic viscera.

(4). The ideal treatment is to be found in the combination of operations for repair, and those for accessory support from above, and these should all be accomplished at the same sitting, saving the delay and annoyance of repeated operations.

LITTLE THINGS IN OPHTHALMOLOGY.

BY A. C. CORR, M.D., CARLINVILLE.

In this section, at the meeting of this Association in Springfield in 1891, I contributed the only paper on ophthalmology. I wrote under this title because the little things in ophthalmology comprise most of the practice and is that most interesting to general practitioners. I say *general practitioners* respectfully, for I believe the well informed *general practitioner* is the most useful and reliable exponent of the profession of medicine.

After much observation and the study of a large share of the ophthalmological literature since the presentation of the paper referred to, I feel that I cannot change the views on its several topics then expressed; so, after referring you to it for a part of my theme, will take up a few of its points and discuss them more in detail. The spectacle business must ever be a matter of importance and interest to all literary, scientific, and professional people, as well as many who are engaged in the arts and trades, and almost all who use their eyes with any constancy at the near point.

It is not like the trade in food and clothing, merely protecting the body and furnishing nourishment, but the use of lenses for the eye is to correct an error, supply a deficiency, cure or prevent disease, and requires some degree of knowledge of anatomy, physiology, ætiology, pathology, and therapeutics, and hence belongs to the profession of medicine.

I frequently see most egregious blunders growing out of the efforts of the mere opticians, jewelers, druggists and spectacle peddlers, by various make-believes, trying to do

this work. On the 20th of last March, Miss Jennie B., of Jerseyville, called on account of some functional trouble with her eyes. No disease manifest, she was wearing a concave cylinder 3/4 D. =1/49—ax. h., when on absolute measurement of her refraction she proved to have 3 D. =1/12 hypermetropic astigmatism in h.—Mer. and should have been pres. +3 D. cylinder ax. v. This concave cylinder was prescribed by one of the best known and largest optical firms in St. Louis, and one who professes to have an oculist who is an M. D. to sell spectacles over the counter with all the "make-believe" that is usual by such firms. The case was a plain one, easily diagnosed and no mystery about it, and is only one of the many similar I could give from my case book.

Page 18 of my paper of '91: "It belongs to the profession of medicine to prescribe for such troubles as require lenses, and physicians ought to prepare themselves so as to *in all* cases do better for the patient than the optician, spectacle peddler, jeweler, or druggist who is ignorant of the mere physiological principles involved, to say nothing of the ananomical, pathological and *physical* ones."

I reiterate the same here. It will not require much time for any one of you to acquire all the knowledge necessary in connection with what you should already know, to enable you to do far better for the presbyopic and many others than those of the trades I have mentioned. If you will read a few pages in some school philosophy or physics in the chapter on light, under the sub-title of Dioptrics and Catoptrics, and the formation and power of lenses, and a few under Hypermetropia, Myopia, and Presbyopia, in some good work on diseases of the eye, which you all have, no doubt. Get you a box of lenses like these and a pair of trial frames such as belongs with the box, and a dozen sample spectacle frames of variety of shaped nose-pieces, and a pupilometer—King's—and a little rule for measuring frames, so as to be able to make a measurement of the face or determine the shape the frame should be, and a card with a variety of sizes of print

from Diamond to Long Primer, and a card of graded large type to put on the wall fifteen or twenty feet away. This outfit is only to enable you to do better that which these trades pretend to do, that of correcting presbyopia, and some cases of hypermetropia and myopia. Farther than this these trades cannot go and you do not want to. I do not mean that these trades ought to be prevented from selling optical goods, but they ought to be discouraged from prescribing or pretending to say or "make believe" what lenses ought to be worn. The physician may use them just as he does the druggist, and only so.

The adjustment of the lenses selected to one's eyes and face is a matter of much more importance than is thought. The pupillary distance should correspond, as near as may be, with the space between the center of the pupils when viewing the objects at the distance the lenses are to be used. The distance between the optical center of the lenses after they are placed in the frames in which they are to be worn, should correspond to this pupillary distance. The height of the nose piece should be so arranged that the line of vision for the same object should pass through the optical center of the lens. The prominence of the nose-piece should be so arranged that the posterior face of the lenses just clears the eyelashes, and the lenses should be so otherwise adjusted that their face should be at right angles with the visual line. If the lens is tilted from this, either vertically or horizontally, it becomes in that meridian in a degree a cylinder.

I wish some of our physicians could see how urbanely and complacently, yet grotesquely they violate every one of the principles in their latest purchase.

Some of you no doubt are ready to ask, "Ought not we to wear nose-glasses?" Yes, if you can get a pair that you can put on twice alike, and that does not, when on, violate two or more of the principles of adjustment I have laid down. They are very convenient but ought not, as a rule,

to be worn for more than a few minutes at a time. Glasses need a firm and steady and *always*-the-same adjustment.

Some no doubt say, "Should I begin to wear glasses for my presbyopia early?" You should begin to wear the correction of your presbyopia just when you can no longer do your near work at a convenient distance and with desirable comfort. Over-work of eyes from ill convenience and optical disadvantages is as liable to produce disease in these organs as over-work in any other organ of the body is liable to produce disease in the same.

I notice that physicians often order patients suffering with weak or sore eyes to wear periscopic London smoked coquilles. Now, if you will think for a minute that most persons are hypermetropic, and that the London smoked periscopic coquilles are concave sphero-cylinders, it will readily occur to you that this ought not to be done, because it tends to fatigue the eyes. It is better to prescribe the plano or flat ones of the same color.

The utility of correcting errors of refraction as a means of relieving headache and many other nervous disorders, has grown in favor, and as I dwelt on it in the former paper, it needs no reiteration here more than to say it has come to stay, and that much that Dr. Geo. T. Stevens claimed for disassociation of the ocular muscles in causing other nervous phenomena has come to be a part of our ætiological and therapeutic system.

Sometimes the heterophoria seems to be of greater importance. Aug. 19, 1892, Miss Florence R., aged 23, a seamstress and dressmaker. Has suffered almost constantly from headache for years, and has paroxysms of violent headache that prostrate her; no disease of eyes; apparently well otherwise; has medicated much with no relief; hyperopic 1½ D.; corrected. April 4, 1893; has had some relief; paroxysms not so frequent; tested for heterophoria, 3° essophoria manifest. Ordered + 1½ D. on Pris No. 1½° base out for each eye. May 10, 1893, since writing this paper, she writes,

"I have had perfect comfort since wearing my last glasses, whereas before my head hurt me badly."

It is not true that all the patients suffering from ametropic or heterophoric headaches or other nervous sequences must ever after wear the correction to have relief? for many very soon stop the trend of nervous pain and discomfort, break the habit which mere circumstances do not re-establish and will have immunity ever after.

Miss Gertrude M., in school, suffering from headache constantly. Hyperopic 1 D. =1/37 corrected, which she wore two years. In school constantly; five years since; no return of headache.

"The pannus and opaque infiltration of the cornea that results from chronic inflammation and degeneration of the palpebral conjunctiva," and of long standing may very often be removed and cured by the rubbing of the lids after the eyes are well filled with dry boracic acid persevered in for a long time.

The case referred to in the former paper in which the acid was so used in the left eye and the yellow oxide ointment in the right, suffered a relapse in the right eye; when the acid was substituted in it, it recovered without another relapse, and has for the past two years remained permanently well and has good vision. I have verified the undoubted utility of such treatment in several cases since.

The treatment of vesicular granulation or trachoma of the conjunctiva by *expression*, as referred to in the former paper, has become, I think, a well established therapeutic measure, although a very fine work on Ophthalmology, written in the German language, in the last year, and *edited with notes* and translated into English by an eminent oculist of this country, scarcely, if at all, refers to it. And I think few authors refer to it with the emphasis its importance deserves. Within the past year Dr. Knapp, of Philadelphia, has devised a roller compression forceps as a substitute for the ring forceps of

Dr. Prince, for the treatment of this trouble. But I think they are not so good and have a very objectionable feature in the shape of the corners of the roller.

There are sequelæ of iritis and irido-cyclitis that make their diagnosis and treatment of great importance, more especially as the treatment and proper care of the iritis are so simple and productive of such good results, and the neglect and want of persistent treatment entail such dire results.

I refer to occlusion of the pupil and complete annular posterior synechia or adhesion of the circumference of the pupil to the crystaline lens, with or without organized deposit of inflammation exudate in the pupillary space, making a complete and impervious partition between the anterior and posterior chambers.

So many of this class of eye troubles in the advanced stage of absolute blindness in the iritic eye and impaired vision in the other have come under my observation that I deem it of importance to emphasize its discussion here.

The primary iritis has usually been traumatic that occurred in infancy or childhood, involving, of course, only one eye, the pupil not having been kept dilated and other care persevered in—the eye trouble thought to be trivial by the friends, and too often the physician—the synechia and occlusion occur. The eye, however, to all appearances gets well and remains so. The slight redness and photophobia and lachrymation occur once in a while in the meantime. After a while, when the child has reached puberty or advanced childhood, it is discovered that it cannot see very well in the other eye, which was not involved in the primary iritis. Advice is sought for this latter discovery, when it is found that not only the occlusion and preternatural immobility of the pupil exists, but also that the anterior chamber is quite shallow as compared with its fellow, and the eyeball unduly hardened or tense. This may be associated with an acute inflammatory or passive condition of the good eye.

I have a case of each of these two varieties under observa-

tion now. The one is a lady 26 years old, mother of two children, who was picked in the eye when a child by a small pet chicken. The pick, while producing no wound, caused an iritis followed by occlusion, the eye becoming soon apparently well, but of course blind. When the child began school it was manifest that the vision of the other eye was much below normal, yet the eye appeared well. This is the history given when the patient came under observation, on the account of a violent inflammation of the good eye, supposed to be brought on by excessive eye work at sewing. The attack was characterized by great pain, protrusion of the ball and such chemosis and œdema that the lids would not close over the ball. As soon as was possible it was found that iritis and chororditis had been involved in the violent inflammation, while the blind, or eye in which the former iritis had produced occlusion of the pupil, was passive, or apparently so.

The other patient is a young girl of 16 years. History very similar, except that she came first under observation on account of a slight conjunctivitis in both eyes. The pupil of the right eye is entirely occluded and bound down to the lens by iritic adhesions, and anterior chamber shallow, and tension markedly increased, and vision not more than 20/200 in L. E., partly from past inflammatory troubles that have left opacities in the vitrious. Hence, as these cases are typical and come under the general practitioner as well as the oculist, the question recurs here pertinently, what shall be the treatment for the primarily affected eye?

Most text-books on ophthalmology are somewhat vague and ambiguous from too much said around about the point.

Fuchs, of Vienna, however, in a recent work comes immediately and with refreshing vigor to the front, and says that "total occlusion of the pupil from posterior synechia calls for iridectomy unconditionally," in which I heartily concur as far as a procedure to stop or prevent the glaucomatous process in that eye, but as to its influence to improve the condition

of its fellow I am not so well satisfied. I suspect that if the iridectomy was made early, the condition of the other eye would be preserved, and even the one on which the operation is performed would be much improved if the subsequent blindness in it could be prevented.

Hence, as soon after past iritis as the condition of pupillary occlusion with diminished size and depth of the anterior chamber has occurred, and the eye has become passive, especially if the tension of the globe is increased, the iridectomy ought to be made.

In the case of the first patient I have mentioned, if some vision had been preserved in the primarily affected eye, as would most likely have been if an early iridectomy had been made, before the eye had been so long subjected to the long pernicious effects of the glaucomatous tension, it would be a great boon even though the other eye had been involved as is the case now, for she is doomed to total blindness, as the latter eye is undergoing atrophy and minus tension as a result of the violent uveitis.

The question of bandaging diseased eyes seems from my observation to need a few words. I believe it is very generally conceded that it is not best to bandage a case of simple catarrhal conjunctivitis in such a way as to retain the secretions and discharge, though such an eye may be shaded and screened from the light. In cases of ulcerated cornea, or of iritis, it is different. In cases of corneal abrasions and ulceration the lids are usually roughened and the constant friction from batting the eye needs to be obviated. The photophobia usually requires more confinement than the mere shade. The effect of the atropia, so necessary to progress is more easily maintained if the eye is kept bandaged, and the spasm of the lids is so much less if they are held steady by the gentle uniform pressure of a bandage.

If in iritis the patient is kept in the dark, the bandage obviates the effort of looking and holding the eyes closed by voluntary tonic contractions of the lids.

It has been my lot during the past year to see some of the bad, I was going to say worst, results of continued poulticing of sore eyes. One from a slight bruise on the outside of the lids by a passing brush, which caused only slight redness and discomfort at the end of a week, was afterwards poulticed continuously for near two weeks, at the end of which time there had occurred an hypopyon ulcer nearly covering the cornea, which healed immediately on cessation of poulticing and paracentisis of the cornea and the use of a disinfecting collyria leaving the vision of the eye permanently very much impaired. From my observation we, as practitioners, ought to have it on our tongues' end ever ready to warn every one who may have sore eyes not to poultice them continuously for more than two or three hours at a time, for any reason.

The effect of poulticing, or the continued application of mere warmth and moisture to allay pain, is to diminish the vital affinity and tonicity, cause anæsthesia and softening of the ocular tissues, and stretching and yielding of the coats of the eye and cause conical cornea, and to hasten the ulcerative process when set up in the cornea. I do not mean to inveigh against the hot-water applications that are so useful in iritis and painful ulceration of the cornea.

There certainly is a large per cent. of the otherwise seemingly incurable cases of conjunctivitis with greater or less involvement of the cornea in the way of pannus that are constantly and persistently aggravated by a catarrhal inflammation or other chronic disease of the lachrymal apparatus—puncta, canaliculus, lachrymal sack and nasal ducts. Yet there may be little in appearance to suggest such as a source of aggravation in the case.

I have a case under observation of a middle aged man who has a bad chronic conjunctivitis with more or less pannus for many years. He has suffered much at the hands of many doctors. Went from the interior of the state to both Philadelphia and Boston for treatment and was treated by competent men in both those cities for weeks, but with no benefit. On

returning home in despair and disgust, he came into my hands. I at once, after close inspection of the parts, slit up the canaliculus and probed the nasal ducts and twice each week probed and ran an ounce of disinfected water through each of them, sprayed the nose and post-nasal space and ordered a daily nasal douche. Rubbed Pagenstecher's ointment in the eyes twice each week. From this first application the eyes began to improve. After a treatment of this character for three months the patient is well and has resumed his work that he was unable to do for as many years.

Another very similar case improved as rapidly while wearing solid leaden styles in the nasal ducts when the ducts were not in the least impervious to probe but through which you could not easily inject water. The styles were worn a week at a time while at the dirty work of pressing hay, without removal, and no other medication except a disinfecting collyria.

DISCUSSION.

Dr. Cassius D. Wescott, Chicago:

The paper we have just listened to is a valuable one, and should not go by without discussion. I can heartily endorse almost everything the doctor has said, and some things might be emphasized still more. It is true that the general practitioner sees a sore eye before the specialist is consulted in nearly all cases, and it therefore behooves the general practitioner to be able to make a diagnosis, to be able to tell whether he can manage the case, or whether it must go to somebody else. This matter I feel I must urge still stronger than the doctor has. Recently I have seen an eye in a promising young dentist absolutely lost because the nature of a purulent conjunctivitis was not recognized by the general practitioner who first saw the case. The patient came under my care after the disease had existed three or four days. It was the most intense inflammation that I have ever seen about the eye, and in spite of all treatment which I could give with the best help of an eminent consultant, the eye was lost. We frequently see cases of this kind, where there is failure on part of the general practitioner to diagnose or to understand the serious nature of eye inflammation.

The general practitioner should also be able to say whether or not a patient has a refractive error. We all recognize errors of refraction as frequent causes of headache and other disturbances of a nervous character, and every one who practices medicine should be able to test the vision and the refraction sufficiently to be able to say whether a patient has or has not an error of refraction. The time is coming when every practitioner will use the ophthalmoscope in the diagnosis of general diseases.

In the matter of adjustment of frames; if we are to wear glasses we should get all we can from them, and as Dr. Corr has said, should undoubtedly look through the center of each lens at right angles to its plane. There is not one among us so ignorant of optical principles as not to appreciate that fact, yet upon the street, in our lecture halls and schools we see this simple principle violated every day.

In regard to bandaging diseased eyes, I think with the doctor that there are some cases of corneal and other affections of the eye where patients had better have the lids held down by a bandage, but I would advise, where a patient is wearing a bandage for a simple corneal trouble, and where there is no penetration of the globe as in the extraction of cataract, that the bandage be removed twice a day, the conjunctival sac disinfected or bathed with a boracic acid solution, and the bandage reapplied. I believe that a safe rule for the general practitioner would be: Don't bandage a sore eye. For I know that I often see eyes that have been damaged by the use of the bandage.

TREATMENT OF BREECH PRESENTATIONS.

BY JOSEPHINE MILLIGAN, M.D., JACKSONVILLE.

In the treatment of breech presentations I offer simply a resumé of the most useful lines of treatment, and I wish to emphasize the importance of examining all pregnant women before confinement, in order that, to a certain degree, the presentation may be a matter of choice to the physician.

A number of cases do not see a doctor, either through ignorance or carelessness, until labor begins. A diagnosis of the presentation before labor is of as much importance as a knowledge of the condition of the kidneys, and the laity should be so instructed.

It requires patience and care to make a diagnosis of presentation and position, by abdominal palpitation ; some cases baffle the most skillful diagnostician. If the patient has fat, tense abdominal walls, with an irritable uterus, so that a vaginal examination is of little or no help, and auscultation fails to reveal anything but fœtal heart sounds, equally diffused above and below the umbilicus, no satisfactory diagnosis can be made. However, in the majority of cases a certain diagnosis can and should be made by abdominal palpitation alone.

When a breech presentation has been diagnosed, if the patient is a multipara, the pelvis roomy, soft parts relaxed, and the child small, masterly inactivity is preferable to interference of any kind.

The manner of delivery of a simple breech case, when the circumstances are so favorable, has been too often described to need repetition.

If there is any delay, from whatever cause, in the expul-

sion of the child, when the os is fully dilated, the manipulation recommended by Mars is very useful; that is, introducing the hand, with the index, second and third fingers applied to the sacrum of the fœtus, and the little finger and thumb over the crests of the ilia, using traction with the pains. If this method fails to advance the child, forceps can be applied, one blade over the sacrum, the other over the posterior surface of the thigh. Lusk considers the danger to the fœtus, if it is at the brim, much less if traction rods are used. Great care is essential to prevent slipping.

In cases of tetanus uteri, or necessity of haste, as eclampsia, etc., the forceps to the breech are of great value in producing rapid delivery. If the os is fully dilated, the forceps save more time than the manipulations necessary in bringing down a foot, whereas if the dilation is incomplete and haste is indicated, I have found to bring down the foot is the better method.

The safe length of time taken for a breech delivery—*i. e.*, after compression of the cord—is variously estimated from six to nine minutes, according to the vitality of the child; so if nature does not expel the head quickly, some help must be quickly given.

The Veit-Smellie, or more justly speaking, the Mauriceau method of putting the index and middle fingers of the left hand on either side of the nose, or the two fingers in the mouth, while the right hand grasps the shoulders, is a very generally successful way to hasten delivery.

Budin says the force exerted in pressing the extremities of the clavicles back is liable to cause paralysis of the fifth and sixth pair of brachial nerves; even more serious consequences may result if too much force is exerted, as a weak child will die from too much manipulation. Pressure on the fundus is a great help, and is a safe mode of aiding expulsion.

If the fœtus is small and pains are deficient Deventer's method of allowing the arms to go up over the head gives an advantage in gaining a few minutes time.

If the head is not promptly delivered by these means, the forceps should be applied.

The indications for the use of the forceps are the same as in head presentations, except that it must be borne in mind that haste is necessary in the interests of the child in head last cases.

Steadler, in his resumé of breech cases, gives seventy-two per cent. of children saved after using forceps on the head. Where the chin is arrested at the superior strait and the head is immovable, or if the pelvis is narrow, the soft parts rigid, and in cases of hydrocephalus, the forceps are invaluable.

In the majority of cases, cephalic version before labor is the most satisfactory treatment for breech presentations.

As early as 1813 Wigand showed the importance of abdominal palpitation in the last few weeks of gestation, in order to ascertain the presentation and position, and if it were unfavorable to correct it.

He was followed by Schmidt, Hohl, Velpeau, Pinard and others, though Mattei was the first to describe at length a clear method of arriving at a diagnosis, and of correcting a malpresentation by external manipulation before labor commenced.

There have been some dissenting voices, as that of Goulard, who asserts that cephalic version is useless and dangerous, and if the manipulations are successful, it is impossible to keep the fœtus in the new presentation ; but statistics do not show this to be the case, if proper care is taken in the selection of cases for cephalic version.

The indications for version are a small fœtus, much liquor amnii, and relaxed abdominal walls—conditions that usually obtain in multipara. If the abdominal walls are fat, the the uterus irritable, the fœtus large, the amount of liquor amnii small, the cord short, and the patient a primipara, cephalic version will be difficult or impossible.

The dangers are rupture of the membranes so inducing labor, or a laceration or loosening of the placenta.

It should also be borne in mind that the uterus might be ruptured or the cord torn, though either of these untoward accidents could only follow force that most patients would not endure.

The most favorable time for performing cephalic version is about two weeks before term.

There are a variety of methods described. I will briefly give Leopold's, as he has given his plan of treatment very clearly.

Have the patient lie on a hard bed, with the knees raised, and by getting her to talk there is a complete relaxation of the abdominal walls. Beginning at the symphysis, with both hands pressed downwards and backwards, the hard cannon-ball head is felt, or the more soft and irregular breech; passing the hands upwards the back of the fœtus gives the position of the occiput or the sacrum, whichever part is found at the brim. The diagnosis should always be confirmed by auscultation. When it has been ascertained that the breech presents, cephalic version may be accomplished in the following manner: with two fingers in the vagina the breech must be raised out of the pelvis, using the other hand at the same time to coax the breech to that side of the abdomen corresponding to the back of the fœtus; the head will begin to move downward; the external hand must be applied to the head to aid its descent. Now, using both hands externally, one to push the breech up one side of the abdomen, and the other to push the head down on the opposite side. If the fœtus lies in the sacro-posterior position, this should be changed to anterior by using the small parts as levers, pressing them downward and backward, and with the other hand raise the back from the posterior to the anterior position, or the patient may be instructed to always lie on that side to which gravity would aid the fœtus to assume an anterior position instead of the posterior, *i. e.*, if the position is right sacro-iliac posterior, have the patient lie on her left side; in this simple way a more favor-

able position may be gained and kept. Then the manipulations for cephalic version will be more easily accomplished.

If uterine contractions are excited, manipulations must cease, to begin again only when no contractions can be felt.

When the version is complete, two folded towels, placed on each side of the uterus and held in position by a firm binder, and a rest of twenty-four to forty-eight hours in bed, will prevent a return to the less favorable presentation.

It should be remembered that cephalic version should not be undertaken in patients with contracted pelves, for a breech presentation may be delivered from a slightly narrow pelvis without resorting to Cæsarean section or symphysiotomy. But in well selected cases cephalic version before labor is a safer procedure than a *laissez-faire* course.

THE PROGNOSTIC VALUE OF TUBE CASTS.

BY I. N. DANFORTH, A.M., M.D.

It has, I think, been the custom of my predecessors in this honorable position to present a condensed résumé of the progress of medical science during the year preceding. I shall offer no apology for disregarding this precedent. The multiplicity and cheapness of medical journals, and their universal patronage by medical men, render the work of the reviewer quite unnecessary; besides, I wish to ask your attention to a subject of special practical interest to every physician, namely, the "Prognostic Value of Casts of the Renal Tube."

No physician in active practice need be reminded of the fact that we have, as yet, no reliable standpoint from which we can predict the outcome in a given case of chronic nephritis; but every physician will promptly admit the desirability of having data from which he can predict the probable result in any such case.

Without stopping to discuss the general symptoms of Bright's disease, for the purpose of estimating their prognostic value, I will pass at once to the subject before us and announce my conviction that the study of tube casts furnishes the best basis for a reliable prognosis in any case of inflammation of the renal parenchyma. And this brings us to the first practical question, namely, what do we mean by "tube casts?"

The answer is very simple; tube casts are cylindriform bodies, formed in the renal tubes, and accurately representing the calibre and conditions of the tubes in which they are found. This is equivalent to saying that the casts disclose

the pathological status of the tubules, and that, by studying the casts from time to time, the progress of a given case towards recovery, or the reverse, may be traced—and such is the fact.

An important preliminary to the study of the prognostic indications of tube casts is a recognition of the varieties thereof, and their proper grouping or classification. Obviously the classification of tube casts should be based upon their pathological derivation, if this can be determined, as I think it can in all cases. A practical study of tube casts, in connection with other clinical manifestations of renal diseases, will convince the observer, first, that *all* tube casts are the consequence of some form or some degree of nephritis; second, that certain casts are the product of and, therefore, denote non-exudative inflammation, which is nothing more or less than a simple catarrhal inflammation as limited and defined by Zeigler; third, that certain other casts are the product of and, therefore, denote exudative or croupous inflammation; fourth, that each class has its varieties, which are easily recognized by characteristic and uniform peculiarities of structure, and that these peculiarities of structure are associated with and, therefore, denote characteristic and uniform pathological lesions. Consequently, I am justified in assuming and asserting that the tube cast, if properly studied and understood, sustains the most important relation to prognosis. On pathological grounds, I suggest the following classification of tube casts:

Varieties of Tube Casts.

1. Casts of Non-Exudative Origin.
   - (a) Mucin Casts (or Mucous Casts).
   - (b) Mucin Casts enclosing Cell Forms.
   - (c) Mucin Casts enclosing Crystals.

2. Exudative Casts. (Fibrinous Casts).
   - (a) Hyaline Casts.
   - (b) Waxy, or Amyloid Casts.
   - (c) Blood Casts.

(d) Epithelial Casts— { Small. Large.

(e) Granular Casts— { Small. Large.

(f) Fatty Casts— { Small. Large.

The prognostic inferences to be derived from casts are based —

First. On the origin of casts, whether non-exudative or exudative, that is, whether mucous or fibrinous. If the former, it establishes the fact that the lesion is a catarrhal lesion only and, therefore, at the worst is limited to a cloudy swelling of the renal epithelium, a condition which always warrants a favorable prognosis; if the latter, it warrants the conclusion that a true croupous inflammation, with characteristic exudation, is present, and the prognosis must be reserved until after mature and deliberate investigation has been prosecuted.

The general professional opinion is that these mucous casts are practically of no importance so far as regards prognosis or treatment; but it is nevertheless true that they are the certain indication of the approach of true Bright's disease, and it is only a question of time when catarrhal nephritis, as indicated by mucous casts, will become croupous or exudative nephritis, with characteristic hyaline casts.

So, also, the general professional opinion is that hyaline casts are scarcely less than a death sentence; at least that recovery is very unlikely to occur after true fibrinous casts have appeared. But my experience during the past ten years fully warrants me in asserting that recovery is not uncommon, and ought not to be unexpected, after the presence of hyaline casts denotes the development of a true croupous nephritis.

Second. The prognostic value of casts depends upon their size or diameter. This applies to a certain extent to all casts, but more particularly to the epithelial and fatty varieties. In my classification I have included "small" and "large" casts.

The small casts are formed in tubules which are not yet denuded of their epithelium and, therefore, are not essentially damaged by degenerative changes. They point to the fact that the calibre of the tubes has not been increased by exudation of their epithelium, and hence they *must* have been formed in tubules whose functional capacity is not materially diminished. Such casts warrant a fairly favorable prognosis, since it is not unreasonable to expect that tubules which still retain their specialized functional cells, although somewhat swollen and cloudy, may recover both their structural and functional integrity, and experience abundantly confirms the prophecy above expressed. On the other hand, casts of large diameter originate in tubules from which the epithelium has disappeared, either in flakes or patches, by a process of exudation, or else singly; or in groups of two or three, on account of degenerative changes. This indicates a situation of great gravity, and always requires an unfavorable prognosis, because it furnishes infallible proof that tubules so denuded are no longer endowed with functional power. But if large and small casts occur in conjunction, and if the small casts predominate, thus indicating that the majority of the tubules still retain their epithelium, a possible recovery may be predicted.

Third. The prognostic value of casts depends upon their regularity or symmetry. A straight symmetrical cast, of uniform size and appearance, must have been formed in a tube not yet distorted and twisted out of shape by the encroachment of pathological connective tissue. It indicates, therefore, the absence of cirrhotic change, and certainly shows that the tubes in which the casts in question were formed have not been damaged by pathological inter-tubal deposit. On the other hand, if the cast is distorted, twisted and asymmetrical, it unerringly points to the fact that it was formed in a distorted, twisted and asymmetrical tube; a tube environed and strangulated by connective tissue which is abnormal as to locality, quantity and behavior. In other words, it proves that

the process of cirrhosis is well advanced, and that the kidney is damaged beyond any possible recovery. Treatment may retard the progress of the disease, but the ultimate history of the case is fixed beyond recall. In all cases of renal cirrhosis —especially those of rheumatic or gouty origin—this point is an exceedingly important one, since the prognosis must necessarily depend upon the degree of renal cirrhosis present, and I know of no way to decide the matter except by a microscopic study of the tube casts, and this in my belief does furnish an accurate and reliable basis for a medical judgment far superior to any opinion based upon general symptoms only.

So, also, in the late stage of tubal nephritis, the roughened, decayed or "nibbled" appearance of the casts show conclusively that the tubes wherein they were formed are undergoing advanced fatty degeneration, and the case must be regarded as utterly hopeless.

Fourth. The prognostic value of casts depends upon their structure or contents. It is probable that all casts are primarily fibrinous; that is, are formed by the union and coagulation of the fibrin factors. Without stopping to argue this proposition here and now, I will assume it to be true, merely adding that it is an opinion which would not be universally accepted. The contents or structural factors of casts vary greatly, and each different factor or group of factors tells its own story.

The hyaline or structureless cast denotes croupous inflammation in the early stage, before degenerative changes have commenced, and in the absence of other and more portentous casts, warrants a favorable prognosis.

The hyaline-blood cast, or the hyaline cast loaded with blood-globules, denotes a renal hyperæmia so intense that some of the delicate renal vessels have been ruptured, and that hemorrhage has occurred. Of course this proves the presence of an acute process, although it may be an acute attack in the course of a chronic lesion. If the former only, a favorable prognosis is warranted; if the latter, the prognosis will, of course, be very grave.

The import of epithelial casts—that is, the hyaline casts loaded with renal epithelia—will depend very much upon the condition of the cells. If they have undergone no essential pathological change, but are simply exfoliated cells entangled in the cast, a favorable prognosis is warranted on theoretical and practical grounds. Recoveries are by no means uncommon under such circumstances. But if the contained epithelia have undergone or are in the incipient stage of fatty degeneration, the prognosis is always grave. In fact, the gravity of the case is in exact proportion to the extent of fatty change shown by the renal epithelium. Of course, I am not now taking into account cardiac or other complications, as it is the purpose of this paper to deal with tube casts and their relations to prognosis only.

When the tube casts become granular or distinctly fatty, the prognosis has at least the positive character of certainty. It is certainly, positively and unerringly bad. The fatal result may still be far off, in fact a partial recovery may take place, but it will prove nothing more than a delusive calm, sure to be followed by a fatal outbreak sooner or later.

Fifth. The prognostic value of tube casts depends upon their relative numerical proportion. If hyaline and epithelial casts exist together, but hyaline casts predominate, the prognosis is less grave than when the latter hold pre-eminence. If fatty and epithelial casts exist together, and the former predominate, the case is in more immediate danger than it would be if the conditions were reversed. And this rule holds good as regards all other combinations of casts as they appear in clinical experience.

I hold, therefore, that the systematic study of tube casts furnishes the most satisfactory and reliable ground work for prognostic conclusions in each and every case of Bright's disease. I do not undervalue other symptoms or indications. I only claim that the prognostic value of casts has been greatly undervalued, and I ask for them a proper place in future prognostic calculations.

LAPARO-HYSTEROTOMY, ITS INDICATIONS AND TECHNIQUE.

BY N. SENN, M.D., PH.D., CHICAGO.

I take it for granted that I am expected on this occasion to give you a *résumé* of the most recent improvements pertaining to the three most progressive departments of the healing art—surgery, obstetrics and gynecology. Should I undertake this task, I am sure I would exhaust your patience without meeting your expectations.

We live in an age of great unrest in medical literature. Books written only yesterday are old to-day. Operations perfected and highly recommended to-day are condemned to-morrow. To recite what has been brought forward as new during the last year in any one of the departments that I am expected to represent, would require more of your time than I deem prudent to occupy. I have therefore decided to be more in accord with the spirit than the letter of the requirements of this Society in the selection of the subject for this paper. Instead of presenting to you in a condensed form the work of others, or an account of my experience in surgery during the last year, I will call your attention to a few salient points on laparo-hysterotomy, a subject of equal interest to the surgeon, the obstetrician and gynecologist. The term laparo-hysterotomy signifies cutting into the uterus from the peritoneal cavity after abdominal section. In operative surgery this designation should be used to indicate an operation by which a fœtus or a tumor is removed from the interior of the uterus through an abdominal incision, followed by suturing of the visceral and abdominal wounds. The delivery of

a fœtus by laparo-hysterotomy has been known since the time of Cæsar as Cæsarean section. Modern nomenclature, as far as the names of operations are concerned, should be established as far as possible upon an anatomical basis, hence the old expression Cæsarean section should give way to the more modern and accurate term laparo-hysterotomy. The same operation is also applicable in the treatment of certain forms of uterine myofibroma to which, of course, the old nomenclature would have no reference.

Indications.—In obstetric practice laparo-hysterotomy will always hold a permanent place as a legitimate procedure. Improvement in its technique, rigid observance of antiseptic precautions and careful selection of cases will be sure to enlarge its range of application and expand its sphere of usefulness. At no distant day it will limit laparo-hystero-oöphorectomy, or Porro's operation, to cases in which the uterus in itself constitutes a source of immediate or remote danger. It is a safer operation than Porro's. Out of 149 laparo-hysterotomies performed on the Continent of Europe, 108 mothers and 136 children were saved. Out of 80 operations in Germany, death of the mother occurred in twelve. The best results have been obtained by Schauta, 15 cases without a death, Leopold 17 cases with three deaths, and Zweifel 29 cases with only one death. Porro's operation is attended by a greater mortality, and is at the same time a mutilating procedure, and no surgeon has a moral right to add to the gravity of an operation for the purpose of preventing conception in the future. The prophylactic part of the operation is not founded on justice, and is not in accordance with modern surgical teaching, and should not be seriously considered by the conscientious practitioner unless the uterus itself is the seat of a life-threatening, removable disease. Cases have been reported in which laparo-hysterotomy was repeatedly performed with success on the same patient. In fact, I am of the opinion that a second and successive operations are fraught with less immediate danger to life than the first. The modification of

Porro's operation, removal of the inverted uterus by the vagina, recommended by Francke and strongly urged by John Bartlett, of Chicago ("A Proposed Modification of Porro's Operation," Chicago, 1886), presents no special merits in the light of modern conservative surgery, and it is to be hoped that it will be limited in the future to the removal of a diseased uterus. More important is a careful consideration of the comparative merits of laparo-hysterotomy and craniotomy. Fortunately the opinion is gradually gaining ground that the removal of a living child by craniotomy is a relic of the barbarous age, and is being regarded from a legal as well as a moral standpoint as a crime. The defenseless babes in their mothers' womb have legal rights which let us hope will be respected more in the future than has been the case in the past. The willful and premeditated destruction of the life of a child on its way into the world has ceased to be a justifiable procedure, and should no longer receive the sanction of the teachers of obstetrics and the profession. A resort to craniotomy should be limited to cases in which the physician can satisfy himself that the child is dead and its removal *per viam naturales* is attended by less danger to the mother than a laparo-hysterotomy. In a very able address delivered before the Obstetrical Section of the Ninth International Medical Congress, Prof. Miller, of Chicago, clearly laid down the indications and contra-indications of craniotomy. He expressed the belief that the cases admitted of no discussion were first, when the child is dead; here, craniotomy is indicated, if the pelvic diameters are sufficient to admit of the extraction of a mutilated child without greater danger to the mother than would arise from delivery through an abdominal incision. He further stated that the second class of cases in which the course to be pursued is clear are those in which the antero-posterior diameter of the pelvis is less than two inches. Here the dangers to the mother incident to craniotomy are as great as in delivery by laparo-hysterotomy, and there is good prospect of saving the life of the child by the latter operation.

In the cases in which the shortest diameter of the pelvis is three and three-fourths inches, he regards laparo-hysterotomy and craniotomy contra-indicated and an attempt should be to deliver the child through the normal channel without mutilation.

The statistics of mutilating vaginal operations collected by Dr. E. P. Davis in his article in the American System of Obstetrics include 1,000 cases by the ablest obstetricians, show a maternal mortality of about 8 per cent. McKelway, in a paper read before the American Medical Association at its meeting in Detroit, expresses himself as follows concerning the results obtainable by laparo-hysterotomy: "I believe it fair to state that the mortality of the improved Cæsarean section, done in women not exhausted by labor, and done under proper antiseptic or aseptic precautions, by skillful operators, is not over ten per cent." I will go one step further and make the claim that in well-selected cases the maternal mortality of laparo-hysterotomy is not greater than the mortality of ovariotomy in the hands of the same operators. Laparo-hysterotomy is absolutely indicated in all cases where the conjugata vera is below two and three-quarter inches, whether the child is living or dead, because the dangers incident to the mother from a craniotomy would more than overbalance the maternal risks of this operation. It is also the operation of selection when the obstruction to delivery is due to the existence of a pelvic tumor or malignant disease of the cervix. In view of these facts, it is only a just inference to conclude that in the future craniotomy should be limited to the extraction of a dead child in cases in which this procedure does not incur more risk to the life of the mother than laparo-hysterotomy, and that in all other cases a healthy living child should be delivered without mutilation by the natural process by the aid of forceps, turning symphysiotomy or by laparo-hysterotomy. Symphysiotomy has recently again come into prominence as a formidable competitor of laparo-hysterotomy. It is certainly to the interests of the children yet unborn that

this operation is being perfected, and that it has met with such a warm reception on part of the profession here and abroad. It will add its share towards limiting craniotomy to its limited legitimate sphere. Its value as a life-saving measure to the child, its dangers as an operation to the mother, must be established by future experience. I fear, however, that many children will be sacrificed by substituting this operation for laparo-hysterotomy in many cases of contracted pelvis. I am also confident that the permanent damage done to the mother is much greater than we have been led to believe by the enthusiastic reports recently published. Time and experience are important factors in determining the safety and value of any operation. It is difficult for me to conceive how the mechanical obstacles to delivery are to be overcome by this operation in any case in which the child is of normal size and the narrowest diameter of the pelvis is less than three inches.

Schauta (Internat. Klinische Rundschau, 1893, 10), made experiments on the pelvis of the cadaver of a woman and found the following increase in the diameters with five ctm. of separation of the pubic bones:

Conjug. vera		+1 ctm.
Trans. maj.		+2.1 ctm.
Trans. ant.		+2.8 ctm.
Transverse	outlet	+3.5 ctm.
Straight	outlet	+0.3 ctm.

With the knowledge thus obtained he made three successful symphysiotomies in cases of contracted pelvis.

According to the experiments of Kilian the utmost extent to which the conjugate diameter can be increased by symphysiotomy amounts to only 1.3 ctm. In some cases also the sacroiliac synchondroses are so firmly fixed that no justifiable amount of force would effect separation to a sufficient extent to be of any value in overcoming pelvic contraction. Injury to the sacroiliac synchondroses, vesico-vaginal fistulæ, incon-

tinence of urine, an uncertain tottering gait, prolapse of the uterus, phlegmonous inflammation, caries or necrosis of the pubic bones, are some of the immediate and remote consequences to the mother which may follow this operation. I am, therefore, inclined to believe that this operation, which has sprung into such prominence in so short a time, will be limited to its proper sphere in the near future, and will be resorted to as a life-saving measure to both mother and child in cases in which there is only a slight disproportion between the size of the child and the pelvis. It is, of course, strictly contra-indicated in all cases in which the obstacle to a normal delivery is a pelvic tumor or malignant disease of the uterus. A somewhat unusual indication for laparo-hysterotomy is the removal of certain tumors of the uterus. Enucleation of subserous myofibromata of the uterus through an incision in the abdominal wall is an established and well recognized operation. This operation, however, is not applicable in cases in which the tumor is located so near the mucous membrane that on its removal by enucleation the uterine cavity is opened. The class of cases in which I wish to recommend laparo-hysterotomy is when the tumor is single, large and projects into the uterine cavity or cervical canal, in other words, isolated, submucous myofibroma not adapted for removal through the vagina. I shall further on report a case of this kind successfully operated on by this method.

TECHNIQUE.

I shall forego the tedious task of describing the different methods which have been devised to effect delivery through the supra-pubic route. I will content myself in giving you a description of the method of operating which I adopted in the two cases which came under my own observation, and which will be recorded in this paper.

Time of Operation.—Authorities, with few exceptions, are agreed upon this point. The consensus of opinion of nearly all modern writers on obstetrics is to the effect that the best

results concerning both mother and child are obtained when the operation is performed during labor. The danger from hemorrhage and septic infection is greatly diminished by firm uterine contractions. Coe (Medical News, October 8, 1892), of New York, pleads in favor of elective laparo-hysterotomy and claims that the results are as good as when the operation is postponed until labor has commenced. If the operation is done during labor, it should never be delayed unnecessarily, and should not be performed as a last resort, but as soon as it can be determined that it is necessary. Exhaustion resulting from protracted ineffectual labor pains greatly adds to the immediate risks of the operation and increases the liability to septic infection. The greatest difficulties encountered in the selection of the proper time are of course met with in primipara. The attending physician must often rely on his own judgment in deciding upon the propriety of the operation. In cases in which labor does not progress satisfactorily the capacity of the pelvis should be determined by a careful examination. If this shows that a living child can not be born, a prompt decision should be made, assistance summoned, and the necessary preparations made. In multipara the previous history is of much importance. If one or more children have been previously delivered by craniotomy, it is more than probable that a laparo-hysterotomy will become necessary.

Preparations.—In all cases in which it can be ascertained before hand that a laparo-hysterotomy should be done, the patient should be advised to enter a hospital several days before the expected labor, and if this is impracticable, she should be brought to some place within easy reach of her attendant. Laxatives and warm baths are important preparatory measures. The room, bed, clothing, etc., must be properly attended to in making the preparations for the operation. The field of operation, hands of operator and assistants, instruments, sutures and ligatures, must be rendered aseptic by strict attention to antiseptic details. Very few instruments are required. A scalpel, half a dozen hæmostatic forceps,

scissors, needles, and a piece of aseptic rubber tubing half an inch in diameter and about two feet in length, will be all that the surgeon will need. For suturing the uterine incision a small darning needle answers an excellent purpose. Catgut, silk and silkworm-gut and a number of aseptic towels and napkins should be at hand. After all the antiseptic precautions have been carried out, nothing but sterilized warm water will be required during the operation. Chloroform should be used as an anæsthetic in preference to ether.

External Incision.—The external incision is made in the median line, commencing at a point just below the umbilicus. It should only be large enough to permit the passage of the child without tearing. It need not exceed six inches in length. The abdominal wall in the linea alba in pregnant women at the end of gestation is exceedingly thin, often not much thicker than a piece of ordinary blotting paper. It has not infrequently happened that the operator not only cut through the entire thickness of the abdominal wall in making the first incision, but at the same time wounded unintentionally the uterus. The first incision should only divide the skin and superficial fascia, and the remaining structures should be lifted away from the uterus and divided between two dissecting forceps, after which the incision is enlarged by cutting between two fingers.

Uterine Incision.—The pregnant uterus pushes before it the intestines and omentum as it ascends from the pelvis, hence after opening the peritoneal cavity the only thing that can be seen is the anterior wall of the uterus. The uterine incision should be made in such place and in such a manner as to limit the hemorrhage to a minimum. The uterine vessels are smallest and least numerous in the median line and away from the cervix. The opening in the uterus should therefore be made in the median line, half way between the cornua, and should not extend any farther in the direction of the cervix than is absolutely necessary. Statistic show that twenty years ago Cæsarean section performed by horned

animals yielded better results than those done by physicians (Harris).

It is a well known fact in surgery that lacerated wounds bleed much less profusely than incised wounds. I am inclined to believe that the difference in the mortality attending the unskillful and skillful Cæsarean sections was largely due to the difference in the amount of blood lost; in the former the opening in the uterus was made by tearing, in the latter it was made by a clean cut with a sharp knife. Sudden loss of blood makes a more profound impression than if the same amount of blood is lost gradually. The large uterine sinuses when divided by a sharp instrument do not retract, consequently spontaneous arrest of hemorrhage occurs slowly, or not at all; but when the sinuses are torn, the lumina are blocked at least in part by torn, lacerated tissue, a condition which favors the formation of a thrombus upon which depends the spontaneous arrest of bleeding.

Murdoch Cameron (The Prevention of Hemorrhage in Cæsarean Section. British Medical Journal, December 24, 1892), has recently introduced the use of a pessary for compressing the uterus at this stage, and this enables the operator, he claims, to cut down upon the membranes without puncturing them. I do not believe that this or any other kind of hæmostatic device is necessary before the delivery of the child, as the amount of blood lost during the time required in making the uterine incision and extraction of the child does not exceed that attending an ordinary delivery, provided, the uterine opening is made quickly, and by tearing in place of cutting. The uterus should not only be in the middle line, but an examination should be made to ascertain that it is not twisted on its axis. Should this be the case, the malposition should be corrected before the visceral wound is made. The median line of the anterior uterine wall can be ascertained by observing the location of the Fallopian tubes; if these occupy the same relative position, a point half way between them will correspond to the abdominal incision. In order to limit the

hemorrhage to a minimum without any artificial hæmostatic agent, I make an incision in the median line of the uterus about six inches in length, cutting down to, but not into, the large vessels. This incision should terminate two inches or more above the cervix. An assistant now makes pressure on each side of the abdomen in such a manner as to retract the margins of the abdominal incision, and, bringing at the same time the uterus well forward into the external incision. The lateral pressure prevents the escape of blood and amniotic fluid into the abdominal cavity. With one cut of the scalpel a button-hole is now made in the center of the superficial incision which penetrates the entire thickness of the uterine wall and without any reference to the location of the placenta. Both index fingers are inserted into this opening, which is then enlarged to the requisite size by tearing. The superficial incised wound determines the direction of the lacerated wound. The tear in the deeper tissues may take place somewhat obliquely, but this is not detrimental either in the delivery of the child or the suturing of the wound. Only a few seconds are required in making the opening in the uterus.

Extraction of the Child.—As soon as the opening in the uterus is made, the operator plunges the right hand into the uterus and quickly grasps one or both feet and delivers the child as speedily as possible by traction, while the assistant keeps up lateral pressure. The hemorrhage is greatly diminished, or nearly arrested as soon as the surface of the wound is compressed by the body of the child. As little time as possible should therefore be lost from the moment the uterine incision is commenced until this stage of the delivery is reached. The uterine incision and delivery of the child can be completed in less than a minute.

Elastic Constriction.—I cannot deprecate too strongly preliminary elastic constriction of the uterus. The time occupied in the application of the elastic constrictor and the rough handling of the abdominal contents cannot fail in adding an increased risk to the operation and in endangering the life of

the child, while as a blood saving procedure it is certainly unnecessary. Elastic constriction has been charged with causing post-partum hemorrhage by Veit, Doléris, Pajot, Zweifel, Sänger and Lusk. We must therefore admit that while its use may prevent bleeding during the early stage of the operation, it is apt to be followed by increased hemorrhage after its removal. This objection holds good when it is resorted to before the delivery of the child. Its employment after this has been accomplished is attended by benefit. At this stage of the operation no time should be lost in attempts to remove the placenta. If the placenta is implanted over the incision, it should be dealt with in the same way as in the delivery of the child in cases of placenta prævia. As soon as the child is delivered, the uterus should be brought out of the abdominal incision and constricted with a rubber tube the size of the little finger at a point below the visceral incision. Instead of tying the ligature, it is better to cross it after making the constriction firm enough and clamp it at this point with a pair of hæmostatic forceps. Prior to making the constriction the uterus should be firmly compressed so as to empty it as far as possible of venous blood. After the constrictor has been applied, the abdominal wound behind and above the uterus should be covered with a large aseptic compress wrung out of hot sterilized water. This prevents the entrance of blood into the abdominal cavity during the further steps of the operation, and also guards against the escape of the intestines.

Removal of the Placenta.—At this stage of the operation the placenta will be found partially or completely detached, and should be removed *in toto* with the membranes. If the placenta is adherent, it is separated at the margin nearest the wound when complete detachment is effected by inserting the tips of the four fingers of one hand between it and the uterus. Fragments of membranes are looked for and removed. The interior of the uterus is then cleansed and lightly dusted with iodoform for the purpose of preventing putrefaction of the blood which accumulates after suturing

of the uterine wound. During this part of the operation it is important to secure uterine contraction by rubbing, and, if necessary, by douching with hot water. Should these measures fail, the introduction of a piece of ice into the uterine cavity may bring about the desired response.

Suturing of the Uterine Wound.—This constitutes the most important and prolonged part of the operation. The suturing must be done in a manner that will secure such accurate approximation of the incised and torn surfaces as to arrest bleeding by pressure, and at the same time separate perfectly the uterine from the peritoneal cavity. Only round needles should be used, a small darning needle for the large and an ordinary sewing needle for the fine sutures. I use four rows of sutures, three of catgut and one of silk. The first row is made of medium sized catgut sutures, half an inch apart, and including the entire thickness of the uterine wall with the exception of the peritoneum. This row of sutures is intended to bring and hold in contact the surfaces of the wound, and should therefore include considerable tissue on each side. After the sutures have been tied, there will be found a little gaping between them ; this is overcome by applying a continued suture of fine catgut, which should bring in accurate contact everything else except the peritoneum. The next step in suturing is to bring in contact a strip of the serous surfaces about one-third of an inch in width the entire length of the wound by a third row of sutures. This row of sutures is intended to invert the serous margin of the wound on each side to the depth of at least one-third of an inch. A small darning needle and medium sized braided silk are used in applying these sutures. The sutures are made to include the peritoneum and considerable of the muscular tissue so as to insure a firm hold. The needle is entered about one-third of an inch from the margin of the wound, and is made to emerge a few lines from the edge when it is made to enter at a corresponding point on the opposite side, and is brought out one-third of an inch from the margin of the wound. Two

sutures to the inch will answer the purpose. The third row of sutures is buried by a continued suture of fine catgut, which includes only the peritoneum and subserous connective tissue. If all of the sutures are properly inserted and tied, they can be relied upon in preventing hemorrhage after the removal of the constrictor, even in cases in which the uterus does not contract firmly. The constrictor is now removed and contractions of the uterus secured before the organ is replaced into the abdominal cavity.

Inertia of Uterus.—If the uterus does not contract promptly, the organ is stimulated by rubbing, kneading, compressing, hot douches, and, if need be, by the faradic current.

Subcutaneous administration of ergot may also be called into requisition. Irrigation of the abdominal cavity is not necessary. Blood and amniotic fluid, both of which being aseptic fluids, are removed by sponging. As soon as the uterus contracts, it is returned into the abdominal cavity, and if it can be done, the omentum should be drawn over the line of suturing.

Suturing of Abdominal Incision.—Owing to the thinness of the abdominal wall, great care must be exercised in closing the external incision in order to prevent later the formation of a ventral hernia. This remote complication occurred in one of my cases. I am now inclined to advise in such cases Edebohl's method of suturing. This consists of a row of subcutaneous sutures of silk-worm gut which include everything but the skin, and are buried by a second row of superficial sutures. Silk-worm gut is not absorbed, but as it gives rise to but little irritation it readily becomes encysted. The dressing and after-treatment are the same as in cœliotomy for abdominal tumors.

I will report in brief the two cases of laparo-hysterotomy in parturient women that have come under my own care.

Case I.—(Reported in full by Dr. H. P. Wenzel, in the Annals of Gynecology and Pediatry, July, 1891). Patient,

24 years of age, German parentage, born in this country. First child delivered by version and craniotomy two years before her second pregnancy. The attending physicians made a careful examination of the pelvis, and found it flattened and contracted to such an extent that they gave it as their opinion that she could never be delivered of a mature living child through the normal passage. The delivery was followed by thrombo-phlebitis and septic infection which nearly proved fatal, and only yielded to thorough intra-uterine antiseptic irrigations. When she became pregnant the second time, her attending physician, Dr. Wenzel, advised her to enter the Milwaukee Hospital a few days before the expected labor, for the purpose of making the necessary preparations for a laparo-hysterotomy. This advice was eagerly accepted. Labor commenced at 6:30 Christmas morning, 1890. The labor pains were regular and strong. The membranes ruptured at 8 A. M. As in spite of frequent and violent expulsive pains the head had not entered the pelvis at 11 A. M., the operation was performed in the manner described above. The record states that the child was outside of the uterus in one minute after the operation commenced, and in ten minutes later the patient was put to bed. The hemorrhage was profuse for a moment, but was arrested by the pressure of the body of the child. The placenta was attached near to the uterine wound, and was removed without difficulty. A large piece of membrane was removed separately. During the suturing of the wound the hemorrhage was controlled completely by the elastic constrictor. The child weighed ten and a half pounds. With the exception of a slight post-partum temperature, the mother made a good recovery. Abdominal incision healed by primary intention. Mother and child are living and in good health at the present time.

Case II.—Woman, 28 years old, native of Munich, where she resided until one year ago. Married four years. First became pregnant three years ago. After being in labor for two days a forceps delivery was attempted, but failed. An

assistant of Professor Winckel was called in who performed craniotomy. He informed the patient at that time, that in the event she should become pregnant again, premature labor should be induced not beyond the thirtieth week, as the pelvis was not sufficiently large to permit the delivery of a full grown living child. Soon after coming to Chicago she became pregnant a second time, and allowed gestation to progress to full term. She was attended by Dr. Broell, attending obstetrician to St. Joseph's Hospital, who, upon examination, corroborated the statement previously made to her, that the pelvic capacity was such as to render the passage of the child impossible without resort to a mutilating operation on the child. She had been in labor for 15 hours, when she was admitted into St. Joseph's Hospital, October 1, 1892. Although the labor pains had been regular and strong, the head had not entered the pelvis. The patient was prepared at once for the operation. The abdominal wall in the middle line was exceedingly thin. The operation was performed very quickly, the patient being under the influence of chloroform, and a large living child delivered. The placenta was nearly separated as soon as the uterus was brought out from the abdominal incision. The uterus contracted firmly immediately after the delivery of the child. The uterus was constricted below the wound as soon as it was brought out of the wound, and the amount of blood lost during the entire operation did not exceed that of a normal delivery. The patient never had an ache or pain, and left the hospital in less than three weeks after the operation. Mother and child remain well at the present time.

Remarks.—In both of these cases hemorrhage was completely arrested by the sutures. No oozing occurred from the needle punctures, as in both instances the last row of sutures was made with fine catgut and an ordinary sewing needle. All of the sutures are absorbed except those of the third row which become encysted between the uterine and peritoneal cavities. It is advisable to use as many absorbable sutures

as possible, but for the third row a material should be used which can be relied upon in maintaining approximation between the inverted serous surfaces for a sufficient length of time. My experience with these two cases has satisfied me that laparo-hysterotomy can be done on the paturient woman with as small a maternal mortality as now attends ovariotomy, and that unless the uterus itself is the seat of a removable life-threatening disease a hysterectomy is absolutely contra-indicated. The time is at hand when gynecologists must, in consonance with modern surgical teachings and practice, mitigate the *furor operativus* and resort more and more to conservative instead of mutilating operations. The generative organs of the female should constitute no exception to the golden rule, never to sacrifice an organ unless it is the seat of an otherwise incurable disease.

Laparo-Hysterotomy for the Removal of Uterine Myofibroma.—I have already alluded to a form of myofibroma as another indication for laparo-hysterotomy. The removal of the uterine appendages and hysterectomy in the treatment of myofibroma are mutilating operations, and should be reserved for cases in which there is no other alternative. I wish to speak in this connection of laparo-hysterotomy as a valuable surgical resource in the treatment of myofibroma of considerable size in young women, located within or near the uterine cavity. I will premise my remarks by the report of a case that has recently come under my observation.

The patient was a married woman, 38 years of age, who had borne three children, the youngest being 8 years of age. She dates her illness back seven years, but was not aware of its nature until recently. For the last six years menstruation has been profuse, and at times painful. She was admitted into St. Joseph's Hospital, November 23, 1892, and the operation was performed a week later. Patient was somewhat anæmic, otherwise her health was not impaired. On examination a hard, smooth tumor was found in the lower part of the abdomen, reaching upward as far as the umbilicus. Vagi-

nal examination revealed a condition which very much resembled the first stage of labor. The os uteri was found high up, widely dilated, and occupied by a smooth, hard tumor, which might have been very easily mistaken for a fœtal head. Bimanual examination satisfied me that the tumor was intra-uterine and single. Owing to the high position of the uterus and size of the tumor, I regarded a vaginal operation as uncertain and dangerous. I determined, if possible, to save the uterus and appendages and remove the tumor by laparo-hysterotomy. On opening the abdomen it was found that the tumor occupied the lower left and posterior part of the uterus. I incised the uterus in the median line from a point a little below the cornua to within two inches of the cervix. I had to cut through nearly the entire thickness of the muscular wall before the tumor was reached. The bleeding was moderate and was readily controlled by the use of hæmostatic forceps. As soon as the tumor was reached, the work of enucleation commenced. At a number of points I had to cut strong bands of connective tissue which seemed to extend from the uterus into the substance of the tumor. When the lower part of the tumor was reached, it was discovered that on the side towards the uterine cavity at a point a little above the cervix the enucleated part was covered by a patch of mucous membrane. Considerable hemorrhage attended and followed the enucleation, which was arrested by packing with a long strip of iodoform gauze. A uterine sound was now introduced from below, and the mucous membrane of the uterine cavity incised upon it the whole length of the bed of the tumor, and the end of the gauze tampon brought down into the vagina. The uterine incision was closed in the manner described before, and the sutures arrested the hemorrhage completely. The abdominal incision was closed in the usual manner. The tumor weighed four pounds. Not a single unfavorable symptom followed the operation. On the fifth day the tampon was removed, the vagina irrigated with a weak solution of corrosive sublimate, and loosely

packed with iodoform gauze, which was allowed to remain three or four days.

The patient left the hospital at the end of the fourth week, and has remained in excellent health since. Menstruation has been normal in frequency and quantity since the operation. It appears to me that in such cases laparo-hysterotomy, is the ideal operation, and should take the place of oöphorecto-hysterectomy and vaginal removal by *morcellement.* In the non-pregnant uterus the tissues are much firmer and less vascular, and the incision has to be made almost exclusively with the knife. The knife should be laid aside as soon as the tumor is reached, when enucleation is effected with the fingers, curved blunt pointed scissors, or a Kocher's director. The hemorrhage from the bed of the tumor can be controlled best by the antiseptic tampon, which must extend into the vagina, serving at the same time the useful purpose of an efficient capillary drain. The mucous membrane was incised the whole length of the bed of the tumor for the purpose of securing free drainage and to facilitate the removal of the tampon. The hemorrhage from the uterine incision can be readily arrested by suturing.

In conclusion I beg to submit for further consideration the following conclusions:

1. Laparo-hysterotomy is justifiable when delivery through the normal passage is impossible without mutilation of the living child.

2. It is absolutely indicated where the conjugata vera is less than two and a half inches when obstruction is due to fixed pelvic tumors and advanced malignant disease of the cervix.

3. Mutilating operations on a living child for the purpose of effecting delivery are no longer legitimate obstetric procedures as laparo-hysterotomy and symphysiotomy are life-saving operations for both mother and child.

4. Hysterectomy after laparo-hysterotomy is only justifi-

able if the uterus itself is the seat of a life-threatening removable disease.

5. Elastic constriction as a hemostatic measure should not be resorted to in laparo-hysterotomy before the delivery of the child.

6. The uterine incision should be enlarged to the requisite extent by tearing for the purpose of diminishing hemorrhage.

7. The uterine visceral wound should be closed by four rows of sutures applied in such a manner as to absolutely arrest the hemorrhage and completely separate the uterine from the peritoneal cavity.

8. Laparo-hysterotomy is also indicated in the operative treatment of single, large myofibroma of the uterus in young women when the tumor is located within or near the uterine cavity.

9. In such cases the uterine incision should be closed in the same manner as in operations on the pregnant uterus, and the bed of the tumor should be packed with iodoform gauze, which is brought through the cervix into the vagina, thus serving the double purpose as a hæmostatic and capillary drain.

SPLIT FLAP OPERATION.

BY J. H. ETHERIDGE, M.D., CHICAGO.

F. Byron Robinson, Chicago: Professor Etheridge requested me, in his absence, to present his paper on Mr. Tait's flat perineal operation to the society:

I have now practiced the flat operation in perineorrhaphy for two years, and have not had a single failure. I was a pupil of Mr. Tait for six months, and I never saw him fail, in a single instance, with its operation. However, in the hands of some I have seen very disastrous failures.

The operation of flap splitting in the perineal body is the most simple and successful of any so far proposed. It is just as successful in complete lacerations as it is in incomplete ones. The operation of Mr. Tait is based on the peculiar method of healing which occurs in perineal lacerations. If a woman with a torn perineum be placed on her back on a table, and the parts well separated, one can see a white linear cicatrix running transverse to the vulvar slit. The perineal laceration was originally parallel to the vulvar slit, or from the vagina toward the rectum. But in healing the cicatricial line took another direction, and when healed it is at right angles to the vulvar slit. Hence the wound healed at right angles to its original direction. This is perhaps unique in the healing of wounds.

Now Mr. Tait's flap operation is based on the principle of resplitting the old cicatrix and reuniting it in its exact original line of tear. Hence the perineum is really restored. To do the operation one needs an elbow scissors with one sharp-pointed blade; a handled needle, with an eye in the pointed

end. The needle should have a long curve. For sutures silkworm gut is the material *par excellence.* The silkworm gut should be boiled five minutes immediately before using to disinfect and soften it. Now, place the woman on her back on the operating table and separate the buttocks well. The transverse linear cicatrix is at once observant which represents the healing of the wound at right angles to the original tear. The scissors are entered between the rectum and vaginal septum. I now split this up from three-fourths even to one and one-half inches, so as to secure wide flaps, and also, on healing, to have a solid perineal body. The scissors point is then pushed under the labia, deep, until it reaches to a level of the urethra, or higher, as experience has proved best. The scissors point is then pushed through the skin and a clip is made. The scissors point is entered between the rectal and vaginal flap on the opposite side and is pushed deeply under the labia up to the urethra on the opposite side, where it emerges, and then a clip is made. We now have a gaping incision reaching from the urethra on one side all around the margin of the vulvar orifice to the urethra on the other side. It is a V-shaped incision. The "back cuts" are made by entering the scissors point at the external end of the transverse portion of the V-shaped incision and pushing the blade of the scissors deep in the tissue parallel to the margin of the anus. A clip is made. The opposite side of the anus is served likewise and we have a V-shaped incision with its concavity backwards. Now a forceps siezes the vaginal flap and draws it toward the urethra, and another forceps siezes the rectal flap and draws it toward the coccyx. When the two forceps are drawn—one in the direction of the coccyx, and the other in the direction of the urethra—we will have an oval surface of denudation which, being united from side to side, the resulting wound will be exactly in the place of the old raphe, reaching from anterior anal margin to posterior vaginal margin. The sutures are introduced by the needle being passed without penetrating mucous membrane or skin. The needle

passes from one side of the oval to the other. The number of sutures employed is four to six. They should remain in the wounds three to four weeks before removal. The union of the wound in the flap operation is very successful, and natural restoration of the perineum is quite certain.

Before the operation the bowels should be thoroughly emptied, and after the operation they should be quiet for several days if the laceration be extended into the rectum.

Tait's flap operation can be reversed and applied to bladder prolapse. Is is one of the best operations for severe uterine prolapse if the clips be carried up to the urethra.

DISCUSSION.

Dr. O. B. Will, Peoria (opening the discussion):

Unfortunately I have not heard Dr. Etheridge's paper and know not what ideas he has advanced. What little I have to say on this subject is this, that I have done the "split flap" operation, as it is called, only twice. Perhaps I do not know how to do it, but I have not had very good success with the new operation. The puckering of cicatricial membrane at the vaginal entrance seems to me to give an unsightly sort of result. Of course, that is simply my experience. The healing was perfect in my cases, but the conviction was forced upon me that leaving *in situ* so large a surface of cicatricial tissue, even if corrugated into small space, cannot be ideal surgery. I experieneed considerable difficulty in removing the sutures at the proper time. In the cases I operated on I put in five sutures and took out three at the end of fourteen days. The others remained in a week longer. The results, in solidity, were good, but the puckering at the entrance of the vagina was not physiological in appearance.

Dr. Robinson:

I have seen quite a number of practitioners examine the cases two months after operation, and they could not tell the operation was done.

Dr. Cassius D. Wescott, Chicago:

I have never had to do the complete operation for laceration into the rectum, but have operated for the incomplete laceration according to the method demonstrated by Dr. Robinson, using

chromicized catgut and chromicized kangaroo tendon, and with perfect results. As Dr. Robinson says, it would be difficult in some cases operated by this method to tell that the operation had been performed. I have done the operation by burying the sutures out of sight, and have also put in chromicized kangaroo tendon without burying it, introducing the stitch half an inch from the incision. The kangaroo tendon will certainly last three weeks if you use good-sized tendon, and it causes no irritation. I have had suppuration in but one case, a very fat patient. I always take some deep sutures down in the angles of the wound, endeavoring to bring together the deeper parts of the wound before introducing the sutures described by Dr. Robinson. I use two or three deeply buried sutures. I have operated with silkworm gut with perfect results, but it is such a nuisance to the patient to have the stitches removed after everything has healed up that I shall never use it again.

Dr. Marie J. Mergler, Chicago:

I have done the operation for complete laceration within the last few months, used silkworm gut, and have had perfect union without suppuration. The last case had been operated on twice according to the old method, but union had not taken place. The woman now has a perfect perineum.

THE SYMPATHETIC NERVE IN GYNECOLOGY.

BY F. BYRON ROBINSON, B.S., M.D., CHICAGO.

The anatomy of the sympathetic nerve is fairly well known. The physiology of the sympathetic nerve is only partially understood. The sympathetic nerve consists of two lateral chains of ganglia extending from the base of the skull to the coccyx. Situated anterior to these chains are two collateral plexuses known as the cardiac and abdominal. Besides these, there exist in all the viscera small ganglia which I shall term automatic visceral ganglia. For example, the automatic hepatic ganglia, the automatic cardiac, menstrual and vesicle ganglia. The distribution of the sympathetic nerve is (*a*) to blood vessels, (*b*) to glands and (*c*) to viscera. It is connected to the cerebro-spinal nerves by the *rami communicantes*. Its independence of the cerebro-spinal axis is not yet fully settled. But babies are born at term with no cerebro-spinal axis. The part of the sympathetic that appears the most independent of the cerebro-spinal axis is that supplying the uterus and the digestive tract. I have kept the intestines of dogs in active peristaltic waves nearly two hours after death in a warm room, by tapping them with the scalpel. I have watched the uterus of a cow keep up its active motion for nearly two hours after she was dead, with no irritation applied to it. The anatomical parts of the sympathetic which direct attention are the cervical sympathetic ganglia (superior, middle and inferior), and the abdominal brain or the solar plexus. Due consideration must be given to the three splanchnics.

1. The cervical splanchnics conducted to the heart, lungs

and stomach through the ascending part of the spinal accessory and the vagus.

2. The abdominal splanchnics originating from the fourth dorsal to the second lumbar and conducted to the abdominal brain through the three or four splanchnics.

3. The pelvic splanchnics conducted to the hypogastric plexus by means of the second and third sacral nerves, to supply the rectum and genito-urinary organs. It may be noted that I have observed for some time that the connection of the genital and urinary system is intimate and very large to all the great nerve centers. For example, the organ which has the most intimate and profound connection to the cerebro-spinal axis and the abdominal brain is the uterus. The eye shares in the organs closely connected with the uterus and both nervous systems. The intimate nervous connection of the uterus to the nervous system increases with the ascending scale of animal life. We can say that the most dominating idea of any animal race is the sexual idea. Sexual ideas are the more profound and wide-spread as animal life becomes higher and more complex.

The *physiological* function of the sympathetic is *rhythm*. Only the sympathetic nerve has rhythm, and rhythm belongs only to a ganglion. The viscera do their functions by means of rhythm. The destruction of rhythm is what causes disease among the viscera. The organs which will have the most pronounced rhythm are those most intimately connected with the abdominal brain. The organ which has the most profound connection with the abdominal brain is the uterus and its rhythm is very apparent. So far as I can observe, the uterus is connected to the abdominal brain by twenty to thirty strong nerve strands.

1. The uterus and tubes have a monthly rhythm due to the automatic menstrual ganglia situated in their walls. No doubt the higher physiological orders originate in the great abdominal brain. This may explain why tubercular girls do not have menstruation at times. The abdominal brain is un-

able from exhaustion to initiate and sustain a rhythm and also in such weak girls a slight event will prohibit a menstrual rhythm. No doubt many such girls have a deficient abdominal brain. Pregnancy and lactation steal away nourishment, and thus rhythm is prohibited. The tubal rhythm is noticed with the most advantage and profit in slaughtering sows. Here it can be observed in all its stages. It is the breaking of the rhythm of one viscus that distracts the rhythm of all the rest. And among all none is so significant as the uterus.

2. I wish to show that the liver has a visceral rhythm through its *automatic hepatic ganglia* similar to the uterus. The occasion of an hepatic rhythm is food carried to it by the portal vein. For example, when fresh food arrives in the liver from the portal vein, the cells of the liver begin to swell; the liver cells are going through their function of making bile, glycogen and urea. The liver is enabled to swell because it has an elastic capsule known as Glisson's capsule. It can also swell because the peritoneum covering it is extremely elastic. Hence the liver can go through its rhythm, 1, by its cells swelling, 2, by the stretching of Glisson's capsule, 3, by the expansion of the peritoneum covering the liver. When the liver arrives at its maximum point of the rhythm, the cells have exhausted themselves in making bile, glycogen and urea. These three products are sent home and the cells begin to contract, Glisson's capsule shrinks and the peritoneum closes back to its original state. Now the liver gets rest, repose and repair, in order to be again able to produce and accomplish a rhythm. It is the breaking of the hepatic rhythm by bad food or distant reflexes of diseased viscera that causes disease in the liver. The most prominent organ that induces irregular hepatic rhythm is a diseased uterus. Alcohol taken without food destroys the nice balance of the hepatic rhythm by falsely alarming the liver to go through its rhythm without due stimulus or by unnatural stimulus.

3. It is plain that the heart goes through a rhythm by means of its automatic cardiac ganglia situated in its walls.

These ganglia are known as Bidder's, Schmidst's, Remak's and Ludwig's. The vagus (especially the right), gives the heart its slow, steady beat, its sober, regular movements, like a pendulum. But it is the three cervical, sympathetic ganglia that rule the heart in regard to rapidity and regularity. Disturb the three cervical sympathetic nerves that go to the heart, and it will run riot or go irregular. It will palpitate or stand still or move at irregular rates. It is the breaking of the cardiac rhythm that causes heart disease in gynecology. A diseased uterus is preëminently the organ that disturbs the heart in its rhythm.

4. The digestive tract has its own special rhythm by means of *Auerbach's plexus* and *Meissner's plexus*. Auerbach's plexus is situated between the longitudinal and circular muscular layers of the digestive canal, and stimulus applied to it induces peristalsis. It controls bowel movements which may be turbulent, producing colic, or insufficient, causing constipation.

Meissner's plexus control's digestive secretions, and stimulus applied to it may induce (*a*) too much secretion, (*b*) too little secretion, and (*c*) disproportionate secretion. The last is a fruitful cause of fermentation. The occasion of a digestive rhythm is food. The main rhythm occurs in the small intestine and stomach.

5. The bladder goes through a rhythm by means of its *automatic vesicle ganglia*. It has a diastole and a systole, *e. g.* the rhythm of the bladder is broken when its nerves are dragged on as in pregnancy.

6. The spleen performs its rhythm by its *automatic splenic ganglia*. The occasion of a splenic rhythm is fresh food. The spleen accomplishes its rhythm by (*a*) the swelling of its tufts and substance, (*b*) by the expansion of its elastic capsule, and (*c*) by the stretching of its peritoneal covering. It rises to a maximum and sinks to a minimum. It is now in action and now in repose. Thus each viscus performs its rhythm by means of its automatic ganglia situated in its substance. Of

course the higher physiological orders of the abdominal brain must be obeyed.

We now come to the diseased viscera. The great pathology of the sympathetic in *health*, and *disease* is reflex action. Of course we have ganglionic sclerosis, recognizable and non-recognizable lesions of the sympathetic, pigmentation and secondary diseases, etc., but the great pathology of the sympathetic nerve in gynecology is reflexes from diseased viscera. I wish to explain in a simple way the results of several years of labor and investigation on the sympathetic nerve. I wish to show that the sympathetic nerve is accountable for many diseases of women through reflex action. We will take Mrs. Smith who had a cervical laceration five years ago, and now she is a neurotic, pale, anæmic woman, unfitted for labor or life.

1. The first manifestation of Mrs. Smith was a laceration which soon make the great essential in cervical laceration, *i. e.*, *endometritis.* The endometritis, then, is the real irritation. This irritation is transmitted up the hypogastric plexus to the abdominal brain, where it is reorganized. It should be remembered that any irritation (force) will travel on the lines of least resistance. The direction of least resistance from the abdominal brain is toward that organ having the greatest number of nerve strands. But the irritiation reorganized will flash out on all the plexuses. (*a*) Suppose we follow the irritation from the abdominal brain to the liver over the hepatic plexus. When the irritation which started from the uterus arrives at the liver, it will disturb its rhythm by inducing the liver, to secrete (*a*) too much (bile, glycogen and urea), (*b*) too little (bile, glycogen and urea), or (*c*) disproportioned (bile, glycogen and urea). However, finally, the rhythm of the liver is disturbed and its function is impaired. Now, (*b*) suppose we follow this same uterine irritation to the digestive tract. The diseased endometrium sends its irritation up the hypogastric plexus to the abdominal brain, where it is reorganized and flooded over the gastric, superior and inferior mesenteric

plexus of nerves. When the irritation arrives at the gut well, the first disturbance arrives in Auerbach's plexus. This will make too much motion (colic), too little motion or irregular peristalsis. As the irritation passes on to the plexus of Meissner, it induces these ganglia to make (1) too much secretion, (2) too little secretion, (3) or disproportionate secretion. Here three things may result, viz.: (*a*) diarrhœa, (*b*) constipation, or (*c*) development of gases or fermentation. The final scene is indigestion. Thus after six months to two years Mrs. Smith has arrived at indigestion. It was all brought about by irritation arising in the uterus which sent its reflexes out to all the viscera, destroying their rhythm.

2. The second stage of Mrs. Smith is malnutrition. It simply resulted from long continued indigestion.

3. The third stage is anæmia from malnutrition.

4. The fourth stage is neurosis from the ganglia being bathed in waste-laden blood. Hence endometritis may induce (*a*) indigestion, (*b*) malnutrition, (*c*) anæmia, and (*d*) neurosis. Again take the heart palpitation at the menopause. It is explained by reflex action. The seed time and harvest of woman is thirty years. During that time regular monthly forces had been transmitted over the hypogastric plexus to induce uterine and tubal rhythm. Now at the menopause, the hypogastric plexus degenerates and will not carry the forces, so the forces accumulate. The accumulated forces in the abdominal brain go up the splanchnics to the three cervical ganglia where they are reorganized and flashed down to the heart, whence it works either too rapid or irregular. This explains palpitation at menopause. Exactly the same explanation suffices for liver disease at the menopause. At menopause the heat and sweat centers are irritated and the woman has heats and flushes and spells of sweating. Pigmentation is also so from reflex action. The irritation spends its main blunt on the liver and spleen to cause pigmentation.

I wish to say a word in regard to the theory advanced by Dr. Bacon. Dr. Bacon advocates the idea that flexions and

kinks in the uterus may be due to long continued reflex irritation. Now, it is generally recognized by careful observers that long continued irritation of a muscle will produce fibroid degeneration and that this fibroid degeneration will end in connective tissue. Also that the tendency of cicatricial tissue is to contract. This has been quite well demonstrated in regard to spinal nerves. Dr. Bacon to-night presents the ingenious idea of transferring the same idea to the muscles supplied by the sympathetic. At first thought I am inclined to agree with Dr. Bacon, though more mature thought may change my opinion. I would add that the nourishment of muscle is likely similar whether it be supplied by a spinal nerve or a sympathetic. Also that it is likely the same whether it is striped or unstriped. Another principle may also be said in favor of the theory of Dr. Bacon, and that is, reflex irritation started on the smallest branch of a nerve will be emitted with the greatest force along the largest plexus to which the nerve belongs, for that will be in the direction of least resistance. Take for example the small branches of the pudic nerve which supplies that part of the rectum subject to hæmorrhoids. If a hæmorrhoid is amputated, the reflex irritation is often reflected over the pudic and down on to the bladder by the great vesicle branch of the third sacral and retention of urine results. The same principle may apply to rectal irritation, being transmitted up to the abdominal brain by way of the lesser mesenteric plexus, where it is reorganized and emitted down the great hypogastric plexus to the uterus. If this irritation is long continued on to the uterus, it may produce fibroid degeneration of parts of the uterine muscle, which results in cicatricial tissue. The cicatricial tissue ends in kinks and flexions of the uterus. Whether Dr. Bacon's theory be true or not, there is no doubt the gynecologist will learn much from the rectal specialist. As the gynecologist acquires more knowledge of the rectum it is likely less cœliotomies may be done.

The pathology of the sympathetic nerve is far from completion. The origin of the sympathetic is still unsettled. Some claim it arises from the cerebro-spinal, others claim it arises *in situ*. The difference between the cerebro-spinal and the sympathetic is that the cerebro-spinal nerves have a sheath—they are medullated, while the sympathetic are not medullated, they are not insulated. Also the sympathetic nerves have a peculiar ganglionic arrangement, and there exists in each viscus an automatic mechanism by which the function of the viscus is ruled. The automatic visceral ganglia rule the viscera, to a certain degree, independent of the cerebro-spinal axis. The visceral functions are placed beyond the control of the will or intellect, so that a man can not speculate on the function of his viscera nor influence them at will to labor more or less. The ganglia in the sympathetic contain the same elements that the brain does. For example, the abdominal brain or solar plexus—

(*a*) Receives sensation.

(*b*) It sends out motion.

(*c*) It is a trophic center.

(*d*) It is a vaso-motor center.

(*e*) It has the power of secretion.

(*f*) It reproduces itself.

It is the nerve *par excellence* of *nutrition*, *circulation* and *secretion*. We claim that it has especially two great brain or ganglionic centers, 1, the abdominal brain, and 2, the cervical sympathetic. These two centers are where nerve forces are reorganized and re-distributed to all the viscera.

The physiology of the sympathetic nerve is to produce *rhythm* through which nutrition, circulation and secretion is executed. The sympathetic nerve maintains life by inducing rhythmical or peristaltic motion in the tubes of the body.

The pathology of the sympathetic nerve is:

1. *Reflex action.*
2. Recognizable lesions.

3. Non-recognizable lesions.
4. Sclerosis.
5. Pigmentation.
6. Atrophy.
7. Secondary lesions to brain spinal cord.

WHAT ARE THE INDICATIONS FOR THE REMOVAL OF THE UTERINE APPENDAGES?

BY MARIE J. MERGLER, M.D., CHICAGO.

The student who has an opportunity of listening to the opinion of half a dozen clinical teachers on the subject of indications for or against removal of uterine appendages in a given case will often be surprised at their variance.

The patient who has suffered some time from dysmenorrhœa, or from other pelvic pains, whether she seeks the advice of a number of the best general practitioners recommended to her at her home, whether she goes from one gynecological clinic to another, or whether she consults as many of the "best specialists" as her purse can afford, is often equally surprised at the variance of the verdict. She will sometimes be undecided for months, and even for years, as to what course to pursue.

One has told her, "Try to allay the inflammation by local treatment, and we can operate as a last resort." Another says, "Removal of the appendage is the only road to health; delay is hazardous; the risk of an operation nowadays is reduced to a minimum." A third doctor says, "You will probably not regain health without the operation, but on the other hand, you must take your own chances in choosing a measure which endangers life, and even then we cannot guarantee success." If this patient follows the advice of the first, who said "Wait," she may be rewarded by perfect health, sometimes on account of judicious treatment, and sometimes without any treatment whatever. On the other hand, possibly she and her friends may regret the delay if she suddenly succumbs to an acute septic pelvis peritonitis.

How about the patient who submits to the operation? She usually survives; frequently the ultimate result is all that has been promised; but almost every physician can recall some particular case, or cases, in which she is even worse than before.

I have in mind now one of these unfortunate ones who probably has consulted every gynecologist in this city, and who has tried to be admitted to the gynecological wards of several of our hospitals since her first operation. The ovaries had been removed for "pelvic pain." She made a good recovery from the operation, but when she was able to be about, the old pain returned with increased severity. For the vesical irritation, of which she subsequently complained, the urethra had been dilated several times. One of the physicians treated her with electricity, but without success. Finally, removal of the uterus was suggested as a last resort. Whether she underwent this operation I do not know; but my impression of the case is that no surgical operation could bring relief to her; on the contrary, any measure that would lower vitality would aggravate the trouble, for she was suffering with a neurosis of central origin. Those who have had a very large experience, and who have watched their patients for some years after the operation, will be able to select with considerable certainty the cases which may, or which may not be benefited; but it is to be regretted that those who have their experience yet to gain will find much in our literature that is contradictory, and even misleading. I will except conditions in which the pathological changes are very conspicuous. On these there is no material difference of opinion. For instance, the reader will hardly be in doubt as to the propriety of removing ovarian tumors. The same applies to tubes which are considerably distended by fluid contents, or whose size is markedly increased by a neoplasm. Removal of the ovaries with the view of arresting the growth of some uterine fibroids is pretty generally sanctioned. The result in well selected cases is often most gratifying; the hemorrhage ceases and the tumor gradually shrinks.

So much for indications which are generally admitted. We next come to those which are the object of so much contention: indications which, when rightly apprehended, have been the means of inestimable benefit; but which, when misapprehended, have brought upon the sanguine operator the criticism of his brethren and the disappointment and sometimes the curse of the patient.

The indications just referred to are as follows: Inflammatory conditions of the ovaries, or tubes, displaced and enlarged appendages, dysmenorrhœa, menorrhagia, epilepsy, hystero-epilepsy, and various other neuroses.

My own observation has led me to conclude that the skepticism concerning operative gynecology in general, and the utility of removing uterine appendages in particular, is not without foundation.

After all that has been written in this country and abroad, in favor of conservatism and against "too much surgery," the lessons too often are still left unheeded; for, on the one hand, claims of success are made in premature reports which do not stand the test of time; on the other, indications are imagined when they do not really exist.

Those who assume the responsibility of deciding when it becomes necessary to remove the uterine appendages may profit by a careful study of the writings of Doleris, Olshausen, Hegar, Lusk, Kelly, Polk, and others, who have given this subject conscientious and careful consideration.

A thorough acquaintance with the works of standard authorities is one of the essentials to success, but even more essential than this is an accurate knowledge of the normal and pathological anatomy of the pelvis and the acquisition of considerable skill in physical diagnosis.

In the majority of cases where unnecessary operations have been advised, or where operations have been performed with very disappointing results, I believe it has been due to one of the following causes:

I. Too hasty decision to operate.

II. Mistaking functional disturbances of the appendages for primary lesions.

III. Mistaking hereditary taints, and cerebral neuroses for the direct reflex of a local and acquired pelvic disease.

I. *Hasty decision.*

I recall at least a score of patients who have come to me from other physicians, on whom an operation had been urged as necessary, and who subsequently regained excellent health without it. One of these had been seen but once, examined hastily, and told to go to one of our hospitals as soon as possible for removal of the ovaries. Very much worried, she went home, had a good cry, and then concluded to see what another would advise. I had no knowledge of her previous experience when she consulted me. I diagnosed the case as endometritis with slight parametritis, and gave the patient a good promise as to recovery, but a guarded one as to time. I noticed at the time the patient asking rather anxiously if her ovaries were not diseased, but failed to suspect a reason for anxiety. Her digestive function was very much disordered, she suffered with severe headache, and her general nutrition was below par, as is usual in these cases. Six weeks of rest in bed, douches, careful dieting and tonics, made a different woman or her. Her menstruation was painless, she could digest simple food and had gained in flesh ; her headache was better, but not entirely relieved. Suspecting eye-strain I sent her to an oculist, who fitted her with glasses, which improved her head symptoms materially. This was two years ago ; she is still in good health, and when I saw her about a month ago, was pregnant.

Another case was one of well marked salpingitis and ovaritis. She had entered a hospital in a neighboring State and had made all preparations for removal of the appendages, but when the time of the operation arrived she lost courage and fled. As there was considerable swelling of the right tube, and she stated she had been a sufferer for many years, I told her frankly that it was very doubtful if anything but an

operation would help her, but if she was willing to put herself under treatment for six or eight months she might improve sufficiently to make an operation unnecessary. Nine months from that time she went home perfectly well, and had continued to feel well for the last two years, when last I heard from her.

Inflammatory conditions of the ovaries so frequently yield to judicious treatment that in every instance it should have a fair trial before the radical operation is urged. The same applies to inflamed tubes. Catarrhal inflammation of the mucosa of the tubes is usually simply an upward extension of an endometritis, and both may be self-limited. The infectious form is more obstinate and more likely to undermine the general health, and indeed often threatens life; but even in these cases, if the conditions for drainage are favorable, recovery without removal is possible. Rest, antiphlogistics and drainage will often accomplish wonders. I admit that the cases of ovaritis and salpingitis, due to infection, may at some time or other unexpectedly light up an acute pelvic peritonitis, which proves fatal, yet this can hardly be regarded as an unqualified indication for immediate removal, for the number of actual deaths from that cause is very small in proportion to the number of appendages thus diseased.

The discomfort due to displaced ovaries is very frequently amenable to milder measures, especially where no firm adhesions exist. Neither displacement *per se*, nor enlargement of one or both ovaries are indications for removal. Both may be the natural consequence of a retroverted uterus, and all the bad symptoms and the enlargement will subside as soon as that organ is replaced and kept in position. Marked ovarian enlargement, associated with grave local and reflex disturbances, may be very transient. It is usually due to venous stasis, and is particularly noticeable just hefore the menstrual period.

The following was to me an instructive case some years ago: I was called to the country to see a patient and her

daughter. The latter was lying in bed, suffering with severe pelvic pain. The mother stated that the girl, who was fourteen years old, had never been very well; that she had menstruated for the first time six months ago, and since that time had paroxysms of severe pelvic pain, associated with great mental depression. The girl seemed very anæmic, and not well developed physically; had been subject to constipation. On making a pelvic examination I found a small retroverted uterus, and the right ovary, of the size of a large hen's egg, prolapsed and very tender. The uterus could be easily replaced. The ovary was so large and resistant that I took it to be a small dermoid, but requested the patient to call at my office in a few weeks for a second examination. In the meantime I prescribed iron and laxatives. When she presented herself a month later the ovary was normal in size and the pelvis free from pain. The patient had menstruated soon after my first visit. The enlargement in this case must have been due to the displacement and premenstrual congestion.

II. *Mistaking functional disturbances due to other causes for primary disease of the ovaries and tubes.*

Women whose general nutrition is disturbed, or those who are subject to great nerve strains, and those who are overworked and underfed, are very likely to suffer from dysmenorrhœa. Strict attention to diet, change of occupation and rest, are indicated in these cases, and will often remove the difficulty without any local treatment whatever.

I have known functional disturbances, particularly dysmenorrhœa and menorrhagia, due to the lithic diathesis, or constipation, to be mistaken for chronic ovaritis.

Hastening the menopause by removal of the appendages would hardly be the most scientific treatment in these cases.

III. *Mistaking hereditary taints and central neuroses for the direct reflex of a local and acquired pelvic disease.*

The removal of the ovaries and tubes has been practiced successfully for severe forms of epilepsy, hystero-epilepsy, and different forms of psychosis; but it is very essential, be-

fore considering this measure in a given case, to determine whether these neuroses are really reflexes of genital origin or whether our patient is haunted by the ghosts of a neurotic ancestry.

Should the latter be the case, a removal of the ovaries will aggravate the neuropathic tendency.

Some authorities claim that this operation is only justifiable where we can demonstrate the presence of ovarian disease by physical examination. Other equally good authorities claim that since grave psychical and other reflex disturbances do occur in cases where the seat of the lesion could not be previously determined, the operation is in some of these cases justifiable, since the field for this operative interference is still to be determined to some extent in an experimental way. This belief, however, expressed by men of large experience, who have given the subject careful study in all its phases, offers no excuse for hasty decision, without acquainting patients and their friends of the comparative uncertainty as to results in this particular class of cases. Nor does it justify the proceeding to the removal of organs about whose size, form and position the advisor does not even pretend to have any definite knowledge. This I have known to be done. Unfortunately, it is much easier to acquire the technique of the operation than the skill and the judgment of deciding when to operate.

In conclusion, up to the present time the experience of our best authorities would define the legitimate limits of the operation, as follows:

1st. Existence of neoplasms in the appendages.

2d. Hernia, or prolapse of the ovary, when irreducible, and when producing urgent symptoms which do not yield to palliative treatment.

3d. To the arrest of the growth of uterine fibroids. Here the limits can hardly be said to be definitely fixed; as a rule, however, the operation may be taken into consideration for tumors which are submucous or interstitial, before the uterus has

attained a great size (Olshausen puts it as the size of a four months' pregnancy). It may also be considered in fibroids when the symptoms are urgent and when, either on account of cardiac weakness or from the presence of nephritis so common in fibroids, the more radical, however more dangerous, operation of laparo-hysterectomy would be attended with too much risk.

4th. Inflamed conditions of the appendages, whose symptoms render the patient's life a burden, and which have resisted a fair trial of palliative treatment. These conditions, complicated by extensive adhesions of the organs, are less likely to yield to mild measures. Even in these cases the breaking up of firm adhesions, after abdominal section, without removal of the ovaries and tubes, has been followed by relief of the symptoms.

5th. The presence of pus in the ovary, and encysted pus in the tube, as a rule require the radical treatment.

6th. To marked reflex neuroses whose origin may be traced directly to diseases of the appendages.

These indications can be but general guides; an inflexible rule cannot be laid down. Every case must be studied by itself, and at all times removal should be regarded as the last resort.

DISCUSSION.

Dr. O. B. Will, Peoria:

I simply want to say that I am glad Dr. Mergler's paper has been read. I think it is in the right direction. My experience and observation are that we cannot be too cautious in promising patients relief from an operation, such as removal of the uterine appendages, when done simply for pain, and without any marked indications of organic disease. I have observed in my own work, and in that of the best operators in the country, that patients have sometimes been made absolutely miserable by operations. I recall to mind a least a score of cases in which the ovaries and tubes were removed simply for the relief of pain, and the patients are as bad, if not worse, than before the operation.

Dr. Fred Byron Robinson, Chicago:

There is no doubt that there are too many physicians operating without the required facilities and skill. We see it all over the country. For example, they take an ovary, hold it up, and say it is cystic. The ovary itself is a cystic organ; therefore, I am opposed to the removal of the ovaries because they are cystic, and because physicians cannot give a pathological point to show that they are diseased.

It must not be supposed that gynecologists make all the mistakes. I saw a woman a short time ago who had been treated for a year for irritable spine. She was examined by a gynecologist and found to have the worst form of endometritis, salpingitis, ovaritis, and a distinct form of leucorrhœa. The irritation of the spine came from diseased genitals.

Again, some time ago a physician, to show how easy a mistake is made, operated on a woman for what he supposed to be a laceration of the cervix. A good observer could see neither a lacertion of the cervix nor of the perineum. Curettement was done and the lacerated cervix sewed up. On carefully examining the rectum large fissures were found which had existed for several years.

I fully agree with Dr. Mergler that these operations should be limited, and not undertaken for pain alone. I believe, when the ovaries are removed simply for pain, the patients are worse off than before the operation.

FRACTURE OF THE PATELLA.

BY W. P. VERITY, M.D., CHICAGO.

The treatment of the fracture of the patella has a history ancient and interesting. For centuries there has been disagreement as to the best mode of treatment. Previous to the 16th century external apparatus for approximating and holding the fragments together was used with few exceptions as to-day. A few recommended simply rest with the leg in an extended position, not even a bandage, and good results were reported then as now. At this time an Italian, Severini, proposed to open the knee joint and wire the fragments together. In 1843 Rhea Barton actually did it with success. Since then the open operation has increased in favor. While many are its ardent apostles, more oppose it as yet, and those who adhere to the open method of suturing the fragments cannot yet agree as to the best methods. In the 17th century Malgaigne introduced his hooks. Since then they have been modified from time to time by not less than a dozen operators, the latest being Levis, Otis, and Andrews. Then came the temporary tendon suture with thread, by Volkmann and others, viz., Kocher, Butcher, Stimson, etc. The greatest impulse was given to wiring of the patella by Lister in 1877, who had good results from suturing the fragments themselves, and opening the joint so wide that fluids could be evacuated and the joint and intervening tissues inspected. At the same time Lister demonstrated the benefit of his rigid antiseptic methods. It was shown, however, that great skill was required to obtain a sepsis. Lister's axiom was "never open a knee joint to wire the patella in a simple fracture

unless morally certain that you have the necessary means and surroundings to prevent infection." In old fractures where great things were expected, under this method it was found that the fragments could not be approximated, even after cutting the soft parts above and below the patella. To overcome this difficulty Von Bergmann and Poncet chiseled off the tuberosity of the tibia to which the ligamentum patellæ was attached and nailed it again to the tibia near the joint. Even this failed to meet the exigencies in many cases. Many modern operators hence claim that the open operation should be used only for recent fractures. Other methods have been proposed and tried on the fragments direct without opening the joint. Mr. Marshall, in 1878, reports two cases where he transfixed the fragments with two steel rods running transversely through the fragments parallel to each other. The fragments could then be approximated and held together by the rods, the ends being fastened together by silk thread. Mr. Lund, in 1882, again brought this operation forward, and in 1889 Mr. Miles of Dublin again introduced it, and in 1892 Mr. William Anderson. How he will succeed with his plan remains to be seen. The difficulty heretofore has been that the pins and ligamenture did not keep the fragments sufficiently firm. Mayo Robson passes pins through the tendons immediately above and below the fragments and secures the ends as in Marshall's method. Ceci and Axford made a subcutaneous suture embracing the fragments in the figure-of-eight form, but it is difficult to get good approximation even in simple transverse fracture, and much more so in multiple fractures as the drilling becomes more difficult, furthermore, the drill must cause more fragments.

To all these subcutaneous methods objections exist, though they are generally safer than open methods. They make no provision for removing blood clots and aponeurotic fibers from between fragments. The open method does. It may be claimed that this difficulty can partially be obviated by aspiration (as first recommended by Mr. Christopher Heath,

of England, and Volkmann and Schede, of Germany), but there remains the difficulty of approximating and drilling by subcutaneous methods. Moreover, aspirations will not remove firm clots, and this has been shown to be a real obstacle (when open method has been used). Most subcutaneous methods do not allow early movements, which, in the opinion of many, is an important factor in restoring the functions of the joint. Furthermore, the majority of this class of sutures are temporary, and removal leaves a sudden strain on new bonds.

Mr. Barker, in a clinical lecture in the early part of 1892, and from which I quote largely, made this statement: "My method overcomes most of these objections; it empties joint better than aspiration; approximates evenly the fragments by an even and equal strain in median line without drilling; no open wound is left to joint; the suture is at once buried and can stand any reasonable strain used in passive motion. I have done this operation successfully in four cases, in one of which the operation was performed in four and one-half minutes. Volkmann's arthrectomies time and again have shown that when the patella is cut transversely it united bony when well coaptated, and these cases demonstrate that fact."

He further states that three probable objections to this procedure could be raised: (1) The suture may give trouble to joint. (This is not the fact in his four cases.) (2) The knot might cause pain in front of knee (which was not the case in his four cases). (3) The joint is open and traversed by needle. But this is not more than is done by aspiration daily, a procedure recognized by all careful surgeons.

Many attempts have been made at subcutaneous methods, but none perfect, though an operation must result that any one can do where no extraordinary skill is required. It must surpass all splints and be without risk as to infection of joint, to subsequent separation of fragments and function. When such an operation or method presents itself, then all will be harmonious. He stated finally that he had done the open

operation a number of times, that he had seen different methods employed by his colleagues, but if he should have his own patella fractured he would now prefer permanent suture by his own method.

During the last year or two the literature on this subject is more abundant than ever. The articles written by Phelps, Pilcher, Fowler, Park, Lucas Champoniere, Stephen Smith, Dennis, Bull, Lutz, Aitkins, Barker, Butcher, Anderson and others, are very interesting and instructive, and exhibit a wide diversity of opinion. The new text-books by Roberts, Wyeth and Treves do not recommend the open operation for recent simple fractures of the patella. Pilcher, in an interesting paper, reports the cases of six surgeons of which the aggregate is 132, Phelps having the largest number, 44 ; the smallest number being 11. The percentage of recovery was very good, but we have yet to hear as to the complete restoration of function. The most of them use the vertical section down to the condyles of the femur in entering the joint, but Stephen Smith makes a transverse section. He sutured the capsule and all torn tissues, giving additional support to the wired patella. His patella suture is applied much the same as all open operators, beginning on the cutaneous surface of the patella a half or three-quarters of an inch from the fracture and runs obliquely downward to the fractured surface just a little above the articular surface, entering the other fragment at a corresponding point, and goes out obliquely to the cutaneous surface of the other fragment. The wire is then drawn tight and twisted, cut short and hammered down into the fractured surface. In the patella, where the structure is not very firm, he recommends that the suture be placed directly through each fragment, and in order to protect the articular surface, a small groove is made into which the suture may be imbedded. He washes the cavity with hot one to a thousand solution of bi-chloride, and closes up the wound with, or without drainage, according to the case. He is a firm believer in this mode of treatment and reports excellent

results. In a recent lecture he spoke of having twenty cases without a death. Although there were in some suppuration in the external wounds, he has never yet seen suppuration in the joint due to this operation. Dr. Roswell Park, of Buffalo, reports twelve cases without a death. Function was fairly well restored, and, in some, complete. He approximates the fragments with two small wire sutures (American Journal of Medical Science, Dec., 1892). Dr. Murphy, of Chicago, has had ten cases; good results, and not yet reported. But these men who have such good results are giants with asepsis, and according to Lister "feel morally certain that they have the necessary means and surroundings to prevent infection."

Fowler (Annals of Surgery, 1891) reports some cases and gives a very lengthy and interesting discussion upon that subject. He did not meet with the same success as others, but had others similar cases their results would probably have been the same. He demonstrated that the joint cavity was ruptured high up on the thigh at the inner side of the bursa, that the joint fluids and blood were forced up into the thigh, and suppuration resulted. It is impossible to wash out the fluids from these rents. He thinks it is a striking proof of the occurrence of rupture of this upper recess of the synovial cavity, and the readiness with which effused fluids may pass beyond the limits of the joint itself and become extravasated along the muscular plain above alluded to. It is occasionally seen in the rapidity with which these effusions may be made to disappear after severe injuries to the knee joint, by the simple application of an elastic bandage. Writers have mentioned instances in which a single application of the rubber bandage has resulted in the total disappearance of the joint fluids. In no other joint troubles are these results to be produced, not even in the knee joint in cases in which the effusion is due to other causes, and there is no reason for believing that in this the joint pressure would hasten the absorption of the fluids in this extraordinary rapid manner. As

a matter of fact, reabsorption does not occur at all. What really happens is the forcing of the fluids from the cavity of the knee joint through a rupture of the latter at the point indicated elsewhere, and into the neighboring intermuscular facias. True, a distention of the upper recess may occur in which no rupture has taken place, but the application of elastic bandages will not result in such brilliant results as above stated, but the tumefaction will gradually subside, not suddenly. The elastic bandage is a good thing to apply to the whole extremity, even where the synovial sack is ruptured, for it will assist in absorption. Dr. Fowler's paper is elaborate and instructive and should be read by all interested in this subject.

Treves says that Lister introduced this operation of wiring the fragments in 1883. Barker says that it was in 1877. Be it as it may, it must be done with the strictest antiseptic precaution, the leg in an extended position, vertical incision beginning an inch above and ending an inch below the fragments, the joint opened, fragments exposed, fractured surfaces cleared of fibrous tissue, and synovial membrane which generally cover them, and fractured surfaces fashioned with a chisel. Mr. Treves thinks the use of a saw for this purpose should be condemned. He uses a toothless lion forceps to steady the fragments, and sponge or gauze placed to prevent blood from running into joint. The bones are drilled obliquely in median line with carpenter's bradawl. It is important that the drill holes should be precisely in middle line, otherwise the fragments will tilt. Pure silver wire one-sixteenth of an inch thick is now introduced and sponges removed, joint washed out, wire tightened by one complete turn. If the wire is to be removed, the direction of the twist should be noted. If the wire is to remain, cut ends short, twist the stump and hammer it flat to bone. Drainage, if necessary, can be done with tube or horse-hair passed through posterior part of capsule of the joint. Mr. Treves

says that leaving the wire permanently has led to some most excellent results. In a few cases, however, trouble has occurred; the foreign body has set up irritation, has caused pain, has prevented kneeling, has induced ulceration of the skin, and finally has led to caries of the bone and suppuration of the knee joint (see cases cited by Jacobson in "Operations of Surgery," page 1030, *et seq.*). The following method, which Mr. Treves has carried out with very satisfactory results in several instances, appears to avoid certain of the objections which may be urged against wiring. The first part of the operation is conducted precisely in the manner already described. The fragments are exposed, the surfaces are freshened, but instead of drilling the bones and bringing them together with wire, they are approximated and held in position by a pair of modified Malgaine's hooks (see paper by Mr. Treves, British Med. Journal, July 24, 1886). The points of the hooks are inserted on each side of the median line, are driven through the uninjured skin, and are forced well into the bone near its attached margin. As the instrument is in two separate parts, the hooks are at first fixed into the fragments independently, and the whole apparatus is made one, when the two hooks hook-carrying plates are brought together. The plates are now screwed together and if the bones can be brought close to one another, they may be approximated as nearly as possible, and the screws tightened daily until they are in close contact. In exceptional cases it may be necessary to divide some fibers of the rectus muscle. In most instances no drain is required. The limb is secured to a straight back-splint and placed upon an inclined plane. The wound is entirely closed by sutures, and it and the apparatus formed by the hooks are buried in iodoform. The general management of the hooks is discussed in the paper already alluded to. The hooks should be retained for some six weeks. Although he has employed this instrument in a large number of cases, and in patients of various conditions, he has never had suppuration follow, and in no instance has

there been any substantial rise in temperature. The removal of the hooks can be effected with the greatest ease.

Treves draws attention to the following points which appear to him to be in favor of his method: The operation is easy and simple, and the apparatus is well exposed to view. The fragments are held together by hooks which are placed laterally through the median line and effect a more perfect and more certain approximation of the bones than does the single median wire. If the bones are not brought together at once, they can be approximated by a more gradual process, viz., by tightening the screw every day for the first few days. (When once the wire is fixed it must remain.) The points of metal penetrate only the surface layers of the bone, and do not—like the wire, involve a seton-like passage through the cancellous tissue. (The removal of the hooks is very easy. The removal of the wire is often difficult.) After the first few hours of the first day the hooks cause no pain. The apparatus of Hamilton, Cooper, Bryant, Agnew, and others, are found to be very good in treatment of simple fractures of the patella.

A procedure from which I have had excellent results (which resembles in some particulars that of Dr. Bryant, although the last had been unreported when present procedure was adopted) is best illustrated by the following case:

A. S., aged 45 years. Swede, contractor; short, stout build, weight 160 pounds. On April 26, 1888, while standing with his hands in his pockets, he was grasped by a friend who threatened to throw him on the floor, throwing him partially down, when suddenly he exerted great muscular force while his right knee was bent, partially flexed, he felt something suddenly give way, and his right leg was powerless. He was immediately laid gently on a table with his leg in an extended position. In this condition I found him less than an hour after the fracture occurred. He was now removed to his home, which was but a short distance. (Before moving his leg was immobilized by back-splint.) The leg was now stripped of all clothing and the right patella was found to be

broken at the junction of the lower two-fifths with the upper three-fifths transversely. The fragments were separated about an inch. There was no evidence of contusion or swelling of any kind, nor was there at any subsequent time. The limb was now placed upon a board with a foot piece which served as a back-splint. It was padded profusely in such a manner as to allow the limb to rest very comfortably, and in a very slightly flexed position, and the far end of the same was elevated about six inches or more above its near end. It now remained to secure the fragments in opposition or as near as possible. The only material I had with me was some adhesive plaster, and applying a piece along the anterior portion of the thigh I attached another piece at the far end of this transversely, so that a crescent notch, which was cut in this piece, would hug the upper margin of the upper fragment. The ends were long enough to extend obliquely forward and downward to the board, where they were anchored by tacks. Another piece similarly, but in a reverse direction, was applied to the lower fragment and attached as heretofore mentioned. The fragments now were in excellent position. A marked crepitus could be obtained when rubbing the two fragments together. The limb was now securely bandaged to the back-splint with a strong flannel bandage after the manner of Hamilton. The limb was seen daily for the first week or ten days. The second day part of the bandage pulled aside at points where the plaster was attached to the board, and while the fragments were supported by one hand, the plaster was tightened gently so that the tension should be as uniform as this method would afford. The fragments seemed to maintain such a good position that I did not think it worth while to change this rude dressing for one more fashionable. The man remained indoors for eight weeks, when he was allowed to go out with a leather support. He immediately went to work, but he wore the support for a period of eight weeks, while at work, but leaving it off nights. When he left the house at the end of eight weeks, the space

between the fragments of the junction was one-half inch, which seemed to be very strong and of the same width and thickness as the fragments of the original patella. The line of union was very difficult to determine. There was a slight motion between the fragments. During the eight weeks' stay indoors he had some active and passive motion of the knee joint and a massage and baths to the muscles of the thigh. May 19, 1891, I had occasion to see this fracture again. The junction was then about three-fourths of an inch in length, and the upper fragment's fractured edge could be dimly outlined between its fibrous connection with the other fragment. The man stated he had perfect function of the limb. On May 11, 1893, I again had occasion to examine the same fracture, and then the patella measured at the medial line three and one-half inches. The junction was very uniformally strong and its width and thickness the same as the body of the patella. The junction of the fibrous connection was very difficult to outline, except at the inner margin, and a portion of the upper fragment. The knee measured fifteen and one-half inches in circumference over the middle of the patella. The lower fragment could be moved laterally upon the tibia three-fourths of an inch. The upper fragment could be moved upon the femur in the same degree. Active flexion not complete, but passive flexion complete. The joint surface under upper fragments of patella slightly rough, cartilaginous friction causing no interference of the functions of the joint. The distance between the inner margin of fracture, one-half an inch; between outer margin, three-fourths of an inch. Free lateral motion between fragments.

May 19, 1891, was called to see the same man and found that he had sustained a fracture of the left patella. The injury had been sustained nine days previous, and the contusion and swelling in and about the knee was so profuse that Dr. Gandy treated the case for four days and never determined that there was a fracture, and four days elapsed when Dr. Quine, their family physician, was called and a diagnosis

made, when he referred the case to me. There was yet considerable fluid in the joint and an extensive ecchymosis. It was immediately put upon a back-splint and secured by flannel bandages. In a day or two after a long anterior adhesive plaster was applied to the anterior portion of the thigh, the lower end of which was cut in a "U" shape, so as to make it embrace the upper fragments, and the ends projected downward two or three inches, which were attached to an elastic band, the band passing below the foot piece; a similar but smaller extension was applied to the lower fragment in a reverse direction. The whole limb and splint were now wrapped in a strong flannel bandage after the method of Hamilton. Along the edges of the splint were driven a number of nails instead of hooks to anchor the bandage more firmly and securely while making the figure-of-eight curve over the patella. The fracture took place at the junction of the lower one-fourth with the upper three-fourths. At this time he was indoors six weeks and wore a support six weeks after he went out. At the end of six weeks he began working. During the stay indoors he had active and passive motion of the joint together with massage and bathing. I did not see him again until May 11, 1893. The length of patella was three inches through the medial line. Junction of fibrous tissue was very perceptible. It seemed to cover the fractured surface evenly and was thinned out in the middle. The band at the narrowest point was one inch and quite thin. The length at the outer side was one and one-half inches; inner side three-fourths of an inch. The lower fragments could be moved an inch also laterally upon the femur. The knee measured fifteen inches in circumference, and the distance between the fragments was quite perceptible both to the eye and hand. The function of this joint was perfect. The fracture was caused by direct force. Last year this man carried mortar with the hod up a ladder into a two-story house and experienced no difficulty in so doing. He claims he can work as well as he ever could.

THE IMPORTANCE OF EARLY MASTOID OPERATIONS IN ACUTE SUPPURATIVE OTITIS.

BY F. C. HOTZ, M.D., CHICAGO.

Whatever may be the opinions of different aurists as to the method of treating mastoid inflammations, they all agree that a pus deposit in the mastoid cavity is a very unsafe, serious condition, because there is no telling how or where it may end. It would therefore appear to be a foregone conclusion that such dangerous pus deposits should be removed in the quickest, safest and most thorough manner.

Nature has shown us the way by which this can be accomplished in her efforts at breaking down the external wall of the mastoid cavity for the purpose of getting rid of the imprisoned pus. We can attain the same end much quicker than nature by chiseling an opening into the cells through the external plate of the mastoid bone. This artificial opening establishes a direct and free drainage; the cavity can be thoroughly cleansed by injections, and we can make sure that no pus is left in the cells to become inspissated and to form the focus of future disturbances.

The immediate effect of this operation is always very decided; the violent, deep-seated pain the patient has been tortured with incessantly, by day and night, ceases almost instantly; a most welcome relief, for which the patients are always very thankful. As soon as the pus is removed, the inflammation in the cells rapidly subsides, and hence the operation effectually averts all dangerous complications which are known and liable to occur in the course of suppurative mastoiditis. And, furthermore, we usually see after the opening of the mastoid

cells, the inflammation in the tympanic cavity subsides very quickly; the purulent discharge often ceases in a few days, the damaged membrana tympani is repaired and the hearing power restored. Hence we may look upon the early mastoid operation as the speediest means of preserving the hearing of the affected ear and of restoring the patient to health.

And when we consider that this operation, so pregnant with beneficial results, is a comparatively simple and very safe procedure; when "the history* of long lists of fatal results following mastoid disease not operated upon, on the one hand, and the steadily augmenting reports of successful results in operative cases on the other, are growing arguments in favor of surgical treatment in the early stages of inflammation of the mastoid cells" it is difficult to understand the position of so many aurists who still hesitate to advise and to perform the operation as soon as they have good reason to believe there is pus in the mastoid cells. In support and defense of their temporizing policy, they point to the fact that in many cases of acute suppurative otitis the mastoid symptoms subside and the patients get well without operation under the use of antiphlogistic measures and with the proper treatment of the tympanic cavity. This is quite true, but a poor argument against the early operation; for in recommending the early opening of the mastoid cells we do not wish to be understood as if we insisted upon the operation at the very first appearance of pain, swelling, tenderness, and other symptoms of mastoid inflammation. No, sir, we do not propose to employ the operation against the inflammation, but for the sole purpose of removing pus from the mastoid cells. Hence the operation has no place in the beginning of mastoid inflammation, because at this early period there is no pus in the cells. In the initial stage of mastoid inflammation our efforts are directed toward subduing the inflammation in order to prevent, if possible, the accumulation of pus in the cells. In some instances the mastoid inflammation is relieved as

*CLARENCE J. BLAKE, Mastoid Cases, Trans. Am. Otol. Soc. 1891.

soon as we enlarge by an incision a small perforation of the membrana tympani to facilitate the discharge of the purulent secretions from the tympanic cavity; or, if the tympanic cavity is thoroughly and repeatedly washed out with warm solutions of boric acid, injected either through the eustachian catheter, or through a fine, soft rubber tube introduced directly into the cavity through the perforated drumhead. In other instances the incipient mastoiditis is arrested by a good local blood-letting, by leeches applied behind the ear, or by an incision through the swollen tissues down to the mastoid bone (so-called Wilde's incision), and in other cases the continued use of warm fomentations over the mastoid region has the desired effect of arresting the inflammation.

But if these antiphlogistic efforts fail to subdue the inflammation within one week — if the symptoms continue in unabated violence, or return soon after the apparent remission — we may take it for granted that by this time the mastoid antrum is filled with pus, and that this pus must be removed if the patient is to get well soon. To continue under these circumstances the non-operative treatment means to subject the patient to a great deal of unnecessary suffering which the operation could prevent.

This reason alone is in my opinion a strong and sufficient indication for opening the mastoid cells at this comparatively early stage of the inflammation. For instance, at the beginning of October of last year, a gentleman, thirty-eight years old, came to me with a very acute inflammation of the right ear, as a result of a rupture of the drumhead. Nine days previously he had put the end of a penholder into the external meatus of his right ear, as people often do to relieve an itching sensation in the ear. While thus occupied he suddenly turned around in his chair, and knocking his elbow against the back of his chair, he pushed the penholder into the ear so far and with such force that its end was driven through the membrana tympani. He felt a violent pain, heard

a loud cracking noise, and three days later had a profuse discharge from that ear.

I found a small longitudinal rupture of the drumhead behind the malleus, the membrane intensely red, and a thin, purulent secretion was oozing out freely. After the ear had apparently been doing well for three days, the patient had paroxysms of severe pain behind the ear at night; there was just a slight indication of œdema and tenderness over a very small area of the mastoid region, and the discharge from the ear being again more profuse than it had been on the preceding days, I enlarged the perforatiou of the drumhead by an incision for freer drainage and easier cleansing of the tympanic cavity. But in spite of treatment and warm fomentations, the discharge continued very profusely, the œdema behind the ear increased, the skin became red and glistening, the tenderness very acute, the pain in the head almost constant, and extending from the ear to the vertex and occiput, and the patient was wearing himself out for want of sleep. It was plain that the mastoid cavity was seriously involved and filled with pus. I was convinced that the opening of this cavity would at once put an end to the patient's suffering, and therefore urgently advised the operation.

On October 19 the mastoid operation was performed; at the depth of eight millimetres a small cavity was reached, containing about one drachm of pus and communicating with the tympanic cavity, as shown by the fact that the boric solution injected into the mastoid cavity ran out of the external meatus. The patient was at once free from headache and fever; *in three days the purulent discharge from the middle ear had ceased completely; in one week the perforation of the drumhead was closed; in four weeks the mastoid wound was healed and normal hearing restored.*

Before this patient gave his consent to the operation he consulted another specialist, who, although he admitted that there was undoubtedly pus in the mastoid, did not speak very encouragingly for an operation, but was rather in favor of putting off

the operation, because sometimes a case like this might still get well without operation, and because there was no sign of imminent danger to make the operation an urgent necessity. I opposed this advice and insisted upon an immediate operation, because I believe in the old doctrine that an ounce of prevention is worth a pound of cure; because I regard it the worst practice to wait until dangerous symptoms arise, and because I knew the operative evacuation of the mastoid cells would restore the patient's health much quicker than if the removal of pus was left to the slow efforts of nature.

But suppose, under the continued antiphlogistic treatment, the acute symptoms — like pain, tenderness and swelling — should sooner or later disappear, we have no assurance that at the same time the pus deposit has disappeared from the cells, or the suppuration in the cells has ceased ; for this may continue without any outward signs, and, pouring its product continuously into the tympanic cavity, it greatly encourages the persistence of the otitis media, and often, I believe, is responsible for its tedious chronic course.

But there is another stronger reason for opening the cells as soon as we are satisfied they contain pus ; we can never tell in which direction the pus will work its way out of the mastoid cells. Though in the majority of cases it breaks down the external plate, and appears on the outside of the bone, there are numerous instances on record in which the pus perforated the inner or upper wall and caused fatal meningitis, phlebitis, or thrombosis of the lateral sinus. How extensively and rapidly the destructive work of the pus deposit may go on is shown in the following instance, in which I am convinced a fatal meningitis would have been the probable result if the operation had been deferred a few days longer.

The patient, twenty-eight years of age, was vigorous and free from constitutional disorders. Three days after an operation in the nose, severe pain in the left ear, followed within twenty-four hours by a copious discharge of sanguinopus. But the pain in and about the ear continued, and at the

end of the first week slight œdema and great tenderness was noticed over the mastoid process. Leeches, hot water applications, and frequent injections of boric acid into the tympanic cavity, effected temporary relief, but after another week the head and earaches, swelling and tenderness over the mastoid returned and rapidly increased. Three weeks from the outbreak of the suppurative otitis, and two weeks after the first manifestations of mastoid inflammation, the cells were opened by the operation, and I was surprised to what extent the suppurative inflammation had carried its destructive work in the short time of two weeks. I found the whole mastoid bone turned into a large cavity filled with pus and granulations; the external wall was only four millimetres thick, but firm, while the inner wall showed a large irregular defect of two centimetres in diameter, where the dura mater and the lateral sinus made up the boundary of this pus cavity. The patient made a very good recovery; after one week the ear ceased discharging; in four weeks he left the hospital, and when he came back to the city two weeks later the mastoid wound was closed by a firm, solid cicatrix.

Many surgeons perform the mastoid operation on the installment plan, so to speak. When leeches, warm fomentations and other treatments have failed to give relief, they make a Wilde's incision, and wait a day or two for results, and when they are satisfied that this incision also failed to stay the inflammation, they then proceed to open the cells. In a paper published thirteen years ago* I pointed out the objections to this practice. There may be danger in delaying the final operation for twenty-four or forty-eight hours, and there is always the danger that the moral effect of the failure of one operation will shake the patient's confidence in surgical treatment so much that he may not submit to a second operation when this is urgently demanded. It is therefore very desirable that we come at once to a definite decision as to whether the mastoid bone should be perforated or whether

* Arch. of Otology, June, 1880.

we may expect any lasting benefit from the simple incision of the periosteum. I showed that our decision must largely be governed by the conditions of the periosteum; for pain, swelling and tenderness may be caused by external or internal mastoid inflammation; but when these symptoms have lasted one or two weeks we can expect a favorable result from the periosteal incision only in case of genuine periostitis, while it has no effect upon the suppuration in the cells at this late period. I therefore insisted that when the symptoms of mastoid inflammation, occurring in the case of acute suppurative otitis, are not speedily relieved by antiphlogistic measures, we should never make a Wilde's incision without being prepared to go further. If the incision discloses unmistakable evidence of primary periostitis, pure and simple, we may abstain from any further operative procedure; but if no such evidence is found, we should at once proceed to the opening of the mastoid cells. And this should also be done if, in the presence of periosteal disturbance, we find a small circumscribed area of the bone discolored or softened; for these are signs of bone disintegration proceeding from the cells outward, and the periostitis found under these circumstances must be regarded as a secondary inflammation. And if, after the most searching examination, I had any doubt as to whether or not the cells should be opened, I should always give the patient the benefit of the doubt and decide in favor of the opening, because a persistent primary periostitis is the exception, suppuration of the antrum the rule, among the complications of acute suppurative otitis. In ninety-nine cases out of one hundred we are sure to find the pus deposit we are operating for, and in the one exception in which we perhaps find none, the operation will prove hardly any more serious than the periosteal incision alone.

I have pronounced the opening of the mastoid cells a very safe surgical procedure; I have not lost one case out of thirty-six in which this operation was performed for suppuration in the cells occurring in the course of acute otitis media. But I

must qualify this statement by adding "if the operation is done with a chisel." The superiority of the chisel over the drill is now so generally conceded that I need not take up your time with arguing this point. Besides, I did not intend in this paper to discuss the technique of the mastoid operation, but to point out its great value in the early period of mastoid inflammation, and to show there is no valid reason why an acute pus deposit in the mastoid bone should not be treated like an acute abscess in any other part of the human body, according to that sound old surgical principle to open an abscess and remove the pus as early as possible.

DISCUSSION.

Dr. A. E. Prince, Springfield, Ill.:

Mr. President: I regret that I did not hear the whole of the paper instead of the latter part of it. What little I have to say, however, will be to fortify the position taken by Dr. Hotz, with reference to the importance of early operations upon mastoid abscesses. One of my early recollections was that of having a case which I considered perfectly safe. A gentleman had a free discharge from the middle ear cavity, with a large perforation in the drum membrane, and in consultation with Dr. Pittner, of Jacksonville, we concluded there was no urgent need for an operation, and so pursued the conservative course. While we were watching and waiting, the septic material of the mastoid abscess found its way along the course of the veins which traverse the mastoid cells and enter the lateral sinus. I was summoned and made an operation. Death followed from cerebral abscess. This case taught me the danger of watching and waiting until the patient is suffering pain, because in this particular case no suffering occurred at any time during the progress of the disease and after the rupture of the mastoid abscess into the middle ear cavity.

Now, it has been suggested by Dr. Hotz that the mastoid cells are peculiarly situated in reference to the danger of complications arising from inflammation at this point. Drainage of the mastoid cells is exceedingly meagre. A collection of pus in the mastoid cells spontaneously must escape through the small opening leading into the tympanic cavity. The formation of a slight amount of granulation tissue will stop this opening, then we have pressure.

Drainage is upward instead of downward, hence the impediment is greater. Furthermore, the separation between the mastoid cells and cranial cavity affords less resistance than is presented in other directions. Oftentimes we find no bone, but dura mater alone separating the mastoid cells from the cranial cavity. We do not know, in any case, what anatomical relation exists, and how little pressure it may take to force matter from the mastoid cells into the cranial cavity.

Besides, an early operation is almost devoid of danger. Dr. Grüning, of New York, has record of one hundred consecutive cases. Any tentative plan will always be followed with a larger percentage of loss of life than the one of immediate incision through the bone.

THE DIFFERENTIAL DIAGNOSIS AND TREATMENT OF SUPPURATION OF THE ACCESSORY CAVITIES OF THE NOSE.

BY DR. J. F. OAKS, CHICAGO.

The subject of suppuration of the accessory cavities of the nose, although not a new topic, is one which has by no means as yet been exhausted.

It is not the purpose of this paper to deal with the subject in the usual categorical manner, but to limit it to the more characteristic subjective and objective symptoms which enable us to differentiate between the affected areas and suppurative foci, together with a brief consideration of their surgical treatment. I must ask your indulgence, because the clinical and practical points that I wish to present in the alloted time must necessarily be more or less disconnected and fragmentary.

Although it is only a comparatively short time since this subject has engaged the attention of rhinologists, yet our literature abounds with reports and communications on this subject, especially on empyema of the maxillary sinus, which latter has received the greater attention on account of its being more easily accessible and formerly more often diagnosticated by accident. Stimulated by the more recent researches of Schaffer, Grunwald, Berger and Tyrman, this fruitful and profitable field for investigation will no doubt receive more attention than in the past.

At the present time, while the recognition of suppurative disease of one or the other of the accessory cavities is com-

paratively an easy matter, the determination of the source of the purulent secretion or its focal point is often involved in considerable obscurity.

Most of the so-called characteristic symptoms are more or less common to disease of all the accessory cavities, viz.: A, suppuration; B, neuroses, manifested by cephalalgia, neuralgia and psychic phenomena; C, ocular disturbances.

A. Suppuration.

We have a purulent discharge (except in the latent form of the disease and when the normal outlet is obstructed), by way of the anterior and posterior nares, dependent upon concomitant obstructive lesions in the nasal fossæ involving the anterior or the posterior nasal openings; it is more or less periodic in its appearance, increased in the morning or on rising. The odor of the purulent discharge may be negative, or there may be a decided fetor common to all dependent upon some peculiarity of the pus, due to retention, decomposition or admixture with retained secretions. We may have the condition present, that gives rise to ozena, which term, to prevent confusion, should be restricted to fetor of the nasal secretions without specifying any particular pathological condition.

Theoretically, the pus from the maxillary, frontal and anterior ethmoidal sinuses should make its appearance in the middle meatus and nasal fossæ; but in the presence of an obstructive lesion involving the anterior end of the inferior turbinal, the direction of the purulent discharge would be toward the posterior nasal openings and simulate disease of the posterior ethmoidal cells and sphenoidal sinus, or the so-called Tornwaldt's disease.

Frankel* has called attention to an increased flow of pus by position of the head well forward and downward for some moments, as being characteristic of antral empyema. This sign cannot be regarded as a positive indication of the source

* Frankel. Berliner Woch. 1877, No. 16, p. 273.

of the purulent discharge, as it may occur in suppuration of the anterior ethmoidal cells, although preliminary cleansing of the middle meatus and making the test in the morning, would undoubtedly make it a quite reliable differential sign.

Pus from the ethmoidal and frontal sinuses is usually not so abundant as in antral empyema; furthermore the quality of the pus is usually more inspissated and tends to caseation and formation of crusts in ethmoidal suppuration, which is seldom a feature in antral disease.

Posterior rhinoscopy often discloses caseous pus in the superior meatus with maceration of mucosa covering middle turbinal which is quite characteristic of suppuration of the posterior ethmoidal and sphenoidal sinuses. A localization of the suppurating foci in this region is rarely possible by anterior rhinoscopy, while posterior rhinoscopy will enable us often to differentiate between involvement of the posterior ethmoidal and sphenoidal sinuses and the deep fissures of the pharyngeal tonsil.

B. Neuroses.

Cephalalgia is one of the most constant of symptoms and is common to all of the accessory cavities when involved in suppurative disease. According to Schaffer*, Killian† and Grunwald‡, it is quite impossible to diagnosticate the focus of the disease by localization of the headache. Grunwald claims to have seen frontal headache very common in antral disease and comments on the absence of facial neuralgia in his reported cases, which most authorities consider as a characteristic sign of antral disease.

In disease of the frontal sinus it usually takes on the character of a supraorbital neuralgia, being intermittent in character, aggravated by mental effort and indulgence in alcoholic liquors. In ethmoidal disease we have orbital neuralgia which may be deep seated and diffuse, while in sphe-

* Schaffer. Theraput. Monatsheft 1890, p. 479.

† Killian. Munch. Med. Wochenschr, 1892.

‡ Grunwald. Die Lehre von den Naseneiterungen, U. S. W., p. 62.

noidal disease we may have a deep seated cephalalgia of a very distressing character, radiating through the side of the face, and involving all the branches of the trigeminus, causing dental, infra- and supraorbital neuralgia.

Rouge* cites a case where a diagnosis of antral empyema was made on account of a severe infraorbital and dental neuralgia. The autopsy disclosed empyema of the sphenoidal sinus with caries of superior wall, perforation and subdural abscess, while the maxillary sinus was perfectly healthy. So constant is this symptom of headache in disease of the accessory sinuses, that it is advisable to examine carefully the nasal and accessory cavities in every case, even if the patient deny any knowledge of intranasal disease, a fact well known to the clinician. It is very difficult, sometimes even impossible, to distinguish by subjective and objective study of a case whether the symptom in question be of a reflex nature or caused by focal irritation, due to pressure from distention of sinus walls with or without rupture, or inflammatory involvement of contiguous structures with caries and necrosis.

Psychic symptoms are frequently encountered common to all, manifested by insomnia, mental hebetude or depression, even to the extent of developing melancholia with suicidal impulse.

Grunwald† relates a case of bilateral empyema of the ethmoidal and sphenoidal sinuses where there was but little complaint of headache; the patient suffered from continuous pressure on the vertex as if pressed upon by a hand, with inability to think or maintain a conversation, on account of forgetfulness. This patient also labored under the delusion that he stood about ten feet away from the person in his immediate vicinity, and that his own voice appeared as if coming from a distance. He also was affected with melancholia and periodic impulses to suicide.

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* Rouge. Berger and Tyrman, Op. cit., p. 23.

† Grunwald. Op, cit., p. 66.

C. Ocular disturbances may be due to disease of any one or to a combination of two or more of disease of the accessory cavities, caused by distension or bulging of sinus walls into orbital cavity with or without rupture or discharge of purulent contents into orbital cavity, giving rise to exophthalmos, amblyopia, diplopia, strabismus, contraction of the visual field, etc. Although exophthalmos may occur in connection with orbital abscess, from rupture of orbital walls of adjoining sinuses, it is most frequent in ethmoidal suppuration, in which case the eyeball is usually crowded outward and well forward. When the source of the orbital abscess is the frontal sinus, the eyeball is crowded more outward than forward. On account of the proximity of the sphenoidal sinus to the optic foramen and sphenoidal fissure, we may have, accordingly, serious involvement of the optic and motor nerves of the eyeball, with more or less impairment of vision as a result of pressure or inflammatory involvement of contiguous structures.

Berger* calls attention to a peculiar feature in connection with amblyopia, which he claims is diagnostic of disease of the sphenoidal sinus, namely, that the peripheral field of vision is invaded before the central field is affected. He would explain it by the fact that the central fibres of the optic nerve are distributed to the outer portions of the retina.

Let me in this connection call attention to the close interdependence of ocular disturbances and intranasal lesions, which fact would seem to make their associated study and treatment more desirable and reasonable, and clinically much more profitable to both patient and surgeon.

Since in a given case of suppurative disease of the nose or accessory cavities the foregoing facts make it quite doubtful that we can determine with certainty the focus of suppuration, we are forced to resort to additional diagnostic aids of which I will only notice, 1st, the probe ; 2nd, exploratory puncture ; 3rd, translumination.

* Berger. Reone Mensuelle de Laryngol, Juli, 88, p. 400.

Jurasz* claims to have succeeded in determining the presence of pus in the frontal sinus by the use of the probe. Practically, it is a most difficult procedure, except when the normal opening has been enlarged by caries or necrosis. Grunwald† says that he has succeeded but once in many cases in successfully probing the infundibulum, but makes the encouraging statement that the ethmoidal and sphenoidal sinuses can be successfully explored. He places the utmost reliance on the probe in determining the focal point of disease in the ethmoid. He says that without the probe it is impossible to make a negative diagnosis, while with it we are enabled to examine all the hidden spaces of the middle and superior meatus. The distal end of the probe should be bent at an obtuse angle to explore the medial as well as the lateral and under surface of the ethmoidal turbinal. In ethmoidal caries or necrosis on sounding with the probe the distal end will penetrate a small opening with roughened edges, and find itself in a cavity which is apparently smooth. This may be due to granulation tissue covering the carious bone, and can be determined by the use of a small curette of corresponding curvature. The normal muco-periosteum in this region is closely adherent and of sufficient firmness to resist the curette if used with delicacy. Not so, however, with granulation tissue, which being less firm, succumbs easily to the curette and we are thus enabled to feel denuded bone. Another point that may prove of diagnostic importance is the fact that a carious spot is usually very sensitive to the probe and consequently quite painful, while the contrary is true when the muco-periosteum is healthy. Sounding of the sphenoidal sinus, although not so easy as that of the ethmoidal cells, yet is readily accomplished if one bears in mind the topography of the nasal fossæ. The probe is passed between the septum and middle turbinal forward and well upward, when the

* Jurasz. Berl. Klin. Woch., 1887, p. 3.
† Grunwald. Op. cit. 154.

probe should be felt to enter through an opening into a space where the distal end is freely movable. The success of the maneuvre depends upon a tolerably straight septum and absence of marked hyperplasia of the ethmoidal turbinal.

2nd, Exploratory puncture.

In antral empyema there is but one sure and reliable diagnostic sign, viz., ocular demonstration of pus by exploratory puncture with or without irrigation. In spite of the fact that the presence of lamina and septa more or less complete, may give negative results where pus is pent up by such anomalous conditions, it however occurs so seldom that we may practically be assured of its absence. Zuckerkandl reported the result of 300 autopsies in which he found incomplete septa in seven and in only one was there found an accessory space which, however, communicated with the main cavity by an opening of the size of a hemp-seed.

3rd. Translumination.

The method of electric illumination introduced by Voltolini and variously modified, was until very recently regarded as an important diagnostic aid. Like many it has proven only of complementary value. However, it is a procedure which is absolutely unobjectionable to the patient, has some value as a positive and very much more as a negative test, and is still in favor with rhinologists as a preliminary step to methods of exploratory puncture or surgical procedures.

The diagnostic value of translumination depends upon zones of illumination and shadows or umbræ. These are modified by anomalous conformation and thickness of the osseous walls and partitions, enlarged turbinals and pathological conditions of the mucosa of the sinuses with or without the presence of pus. Although translumination has proven a disappointment as well as an embarrassment to many, yet it has served a useful aid, not only in the diagnosis but also the prognosis of antral and ethmoidal disease.

Of late I have followed the plan of Ruault* by placing an

* Ruault. Jour. Laryngol and Olotol. Vol. 7, p. 155.

incandescent lamp of sufficient illuminating power in the mouth laterally, below the lower wall of the antrum (not centrally on the dorsum of the tongue as usually practiced), when under normal conditions, on each side of the level of the nasal bones will be seen a clear zone of illumination irregularly oval, less bright than the corresponding suborbital region, but clearly distinct from the surrounding darker parts. We also get an illumination of the pupil, known as the pupillary reflex of Davidsohn*. Garel† has called attention to a new sign, viz.: "absence of luminous perception on the affected side," which has proven of great value. According as the individual has a narrow nose, small maxillary sinuses, a high arched palate or tumefaction of the turbinals, the value of the signs of Davidsohn and Garel are more or less vitiated. However, the presence of an umbra in the ethmoidal region with a purulent discharge from the nose and translucency of the corresponding cheek is a diagnostic sign of great value and would point to disease of the ethmoid.

The limit of time precludes my entering into further details concerning this fascinating method, but I wish incidentally to call attention to the fact that a dark room is not absolutely necessary for successful experimentation with this method. A dark hood of any design, or a dark cloth placed over the head of the patient and that of the observer, such as is used by the photographer, although not so æsthetic as the dark room, yet is quite satisfactory.

It is in the cases of associated suppuration of two or more of the accessory cavities where we meet with the greater difficulties of a differential diagnosis, especially when this occurs on the same side.

It is necessary therefore to determine 1st, the foci of suppuration, 2nd, whether they are primary or secondary infections. Killian‡ and Grunwald§ report cases of associated

* Davidsohn. Archives intern de Laryngol. 92, p. 264.
† Garel. Jour. of Laryngol. Rhinol. & Otol. 1892, p. 502.
‡ Killian. Munch. Med. Woch. 1892, p. 40.
§ Grunwald. Op. cit. 159.

empyema of the maxillary and frontal sinuses and ethmoidal with antral suppuration where the purulent discharge from the antral cavity persisted until free exit to the pus in the frontal and ethmoidal sinuses was established, which was followed by spontaneons cure of the antral empyema.

In bringing this paper to a close I wish to consider as briefly as possible the surgical treatment of suppuration of the accessory cavities of the nose, and trust that in trying to avoid the Scylla of too great length I will not have fallen into the Charybdis of paucity of detail.

When ordinary treatment has failed to establish free exit of the secretions through the normal openings of the assessory sinuses into the nasal cavity and the retention of secretion or the presence of pus has been determined or is strongly suspected, it becomes necessary to establish the patency of the normal openings by the probe, air douche, etc., or to create an artificial opening for the free exit of pus and to secure efficient drainage.

When it occurs in connection with hypertrophy or hyperplasia of the turbinals, exostoses, polyps, other neoplasms or carious teeth, it is of the first importance to remove these lesions as far as possible by the proper treatment so as to permit of free access to affected parts. I am of the opinion that the more radical and thorough surgical measures are far more gratifying in their results to both patient and surgeon than the tentative and too conservative treatment so often pursued. Suppuration of the accessory cavities runs a decidedly chronic course and show little tendency to spontaneous cure. While the disease is confined to the sinuses themselves, there is no serious danger to life, but when it extends to the cranial or orbital cavities, the prognosis becomes correspondingly grave. Therefore the treatment must be, not only curative or palliative but prophylactic. The already too great length of this paper precludes a critical review of the methods of surgical procedure calculated to carry out the surgical maxim, viz.: "To give free exit to pus wherever found." In

most cases of suppurative disease of the accessory cavities, the amelioration from proper surgical treatment is rapid, although the cure may be slow, owing to the chronicity of the disease and the extent of the involvement of contiguous structures.

From a critical analysis of the literature pertaining to this subject and clinical experience in a few cases which the limit of time forbids my reporting in detail at this time, I have formulated the following conclusions:

1. When the presence of pus or retention of secretions has been diagnosticated, the indications are to secure free exit of the same and efficient drainage.

2. In antral suppuration, the opening should be made with chisel and mallet through the canine fossa according to the method of Kuster* or Robertson†, of sufficient size to permit exploration with the little finger and small incandescent lamp, followed by curettage if necessary and the dry method of Krause-Friedlander‡.

3. In sphenoidal suppuration the method of Schaffer is to be commended, viz.: enlargement of normal opening by breaking through anterior wall of sinus with curette and through curettage.

4. In frontal suppuration the choice of operative procedure depends upon the indications, viz.: If there is bulging of the inner and upper wall of the orbit, that site should be preferred for the artificial opening. The point usually selected for the latent form is immediately below the supercilliary ridge, and near the bridge of the nose of sufficient size to give free access to the sinus for purpose of exploration, thorough drainage and re-establishing communication with the nasal cavity.

5. In suppuration of the ethmoidal cells guided by the indications of the probe as to the presence of caries and pus, we should proceed to open up all suppurative foci by means of

* Kuster. Deutsch. Med. Woch. 1889, p. 12.
† Robertson. Jour. of L. R. & O. 1892, p. 81.
‡ Krause-Freidlander. Berl. Klin. Woch. 1889, p. 37.

the snare, hot or cold, nasal cutting forceps, curette, trephine, gouge or the galvano-cautery knife.

6. A thorough knowledge of the topography of the ethmoid, its anatomical relation to the cranial and orbital cavities, together with a high degree of manipulative dexterity, will enable one to proceed with the assurance and rapidity that is so desirable in view of the free and annoying hemorrhage which is usual in intranasal surgery.

PERITYPHLITIS—REPORT OF THREE CASES OF PERFORATING "CÆCITIS" AND "PERICÆCITIS."

BY F. C. SCHAEFER, M.D., CHICAGO.

It has been claimed by Dr. McBurney, of New York, that ninety-eight per cent. of the cases called perityphlitis are really cases of appendicitis, and this statement seems to have been almost universally accepted by the profession of our country, for the term perityphlitis has been dropped from some of the new text-books and the writings of most surgeons, and "appendicitis" adopted as a substitute. This change of terms has been accepted with too great haste, in my judgment, and is in all probability one of the chief causes which leads to the great differences of opinion relative to the question of operating, for we shall find upon searching the literature of this subject that various conditions may be, and in all probability are, described under the term "appendicitis." I am led to believe, through my experience, that a larger percentage of cases of so-called appendicitis than we are aware of are inaccurately diagnosed. This, of course, will be difficult to prove, but when we look at the facts produced by practical experience, enough presumptive evidence can be brought forward to indicate that the assertion is not without foundation. How do we arrive at the facts concerning the statistics of appendicitis? First, by noting operations. Second, by recording results of autopsies. But is it not reasonable to suppose that the greatest source of statistics of lesser diseases of the caput coli is lost in the fact that they recover? (It is claimed by Treves that eighty per cent. of *all* cases get

well spontaneously, so that no autopsies are made.) I feel convinced that a simple catarrhal cæcitis with an accumulation of fæcal matter is mistaken for appendicitis much more frequently than is supposed, having had at least five cases of the kind myself, recently, which recovered. In each after the acute symptoms subsided, repeated colonic flushings brought away large quantities of dry, lumpy fæcal matter and the tumor vanished suddenly.

The cæcum is a pocket in which fæcal matter accumulates, and to what an extent may be readily imagined when we think of the scores of patients who come to every physician, complaining of chronic constipation. In many of them the cæcal pocket becomes over-distended by the superincumbent weight of fæcal matter in the ascending colon. In some the valve of Gerlach in the appendix is rendered patulous by the same cause; enteroliths, other foreign bodies and frequently septic materials are pressed against the mucous lining; the fluid portions of the accumulations are absorbed, the residue becomes inspissated and impacted, then the bodily movements, a sudden jar from a jump or pressure in the effort of defecating, produces a sudden friction or tearing movement starting an irritation which leads to acute inflammation followed by the group of symptoms belonging to what nowadays is called appendicitis, but which might be more appropriately named—if I may be bold enough to venture a re-christening of the condition—a cæcitis or a pericæcitis, until the exact condition can be made out with the knife, if it should become necessary, or by other methods if possible. We say metritis and perimetritis for inflammatory conditions of another portion; why not apply terms in an analogous manner here? In nearly every instance the cæcum is more or less involved even if the disease seems to originate in its offshoot or branch. The whole is greater than a part. As so large a percentage get well, not a vestige of the disease remaining, treated medically it would certainly appear as if a large proportion of them could not have been appendicitis, for the pathology of

appendicitis is such as to leave some local evidence of a pathological condition present for months and occasionally years after the attack, followed frequently by relapses, and even such evidence is not all-sufficient to prove the case an appendicitis, as at least one case, which I will report in this connection, demonstrates.

In considering this subject we are at once confronted by two problems: First, Diagnosis. Second, The question of operation.

In perusing the literature on "perityphlitis" and "appendicitis," which, during the past four years, has become extraordinarily voluminous, one is struck with the fact that most writers and operators take a radical stand either for or against operative procedure, and those who favor operating are again divided upon the issue of "early" or "late" operation. It may seem strange to the casual reader that minds experienced in the same kind of work should differ to so great an extent in considering questions of so practical a nature. There is an old axiom, "whenever pus is discovered let it out if possible." That the indications for the evacuation of pus in this instance is of greater import than in many other conditions or locations no one will dispute. What then causes the hesitation? First, The difficulty lies in the finding of the pus. Second, The great danger to the peritoneum, and the sequelæ.

The first difficulty the surgeon will always be confronted with in a proportion of the cases. The second difficulty will be more and more ignored as we become more familiar with the work and more perfect in antiseptic surgery. Doubtless the interests of the patient in the future will depend largely if not entirely, upon the skill of the diagnostician. The symptoms which the majority of authors agree upon to help establish the diagnosis of appendicitis or perityphlitis, and I may say "cæcitis" and "pericæcitis," are as follows:

1st. History of sudden onset, pain acute, frequently colicy, with or without chill.

2d. In many instances vomiting immediately. In a large number vomiting does not occur until the second or third day.

3d. Localized pain and tenderness in the iliac fossa, usually from onset. Frequently pain is diffused over the abdomen but soon becomes localized *in most cases.*

4th. Point of tenderness can be made out with pressure of finger on the middle of a line extending from anterior superior spine of the ilium to the navel, called McBurney's point.

5th. Constipation usual—not constant.

6th. Frequent œdema over iliac fossa, with redness.

7th. In many cases a distinct tumor can be felt.

8th. Flexion of the right thigh.

9th. Rigidity of the right rectus muscle.

10th. There is more or less shock, the degree depending upon the gravity of the disease and quality of the patient.

11th. After a few hours or days tympanitis occurs.

12th. Pulse generally small and rapid. In plethoric, strong persons the pulse may be large at outset.

13th. Percussion dull unless tympanitis extends over iliac region.

14th. In a few cases a tumor can be felt inside of the rectum.

15th. In a limited number fluctuation can be made out.

16th. The tumor may disappear suddenly ; a grave symptom, indicating rupture of the abscess wall, possibly into the iliac fossa, frequently into the peritoneal cavity.

As many of the symptoms are present with other conditions, it becomes necessary to differentiate from, 1. Enlarged inguinal or iliac glands. 2. Typhoid fever. 3. Hernia. 4. Hydro- and pyo-nephrosis. 5. Abscess of the liver. 6. Lumbar abscess. 7. Pyosalpynx. 8. Pelvic abscess. 9. Volvulus. 10. Ovarian disease. 11. Intussusception.

Enlarged glands lead to confusion if suppurating.

The history will assist in clearing the diagnosis.

Typhoid fever.—Appendicitis has been mistaken for typhoid fever, especially when diarrhœa was present. A case

of this has been mentioned by Dr. D. B. Lees (*London Lancet*, Feb. 20, 1890). It can usually be readily eliminated at the beginning, but when met in the advanced stage we must depend largely upon the preceding history, recalling the symptoms of perityphlitis and reason by exclusion.

Pyo-nephrosis and hydro-nephrosis have generally been preceded by symptoms of kidney and bladder trouble, and the tumor will be found to have descended from above the ilium.

Abscess of the liver gives history of hepatic tenderness, frequently more or less jaundice, and the increased area of dullness extending downwards. The abscess, in many cases, follows in the wake of suppurative disease elsewhere—from the portal circulatory area, a suppurating catarrh of gall-bladder, osteomyelitis or pyæmia.

Hernia will sometimes puzzle one, especially incarcerated hernia, an instance of which I vividly recall from my own experience. Having been called to consult with a Chicago physician over a case of pain and inflammation in the right iliac fossa, I found the patient, a gentleman aged about forty years, had moved his furniture into a new residence two days before; he helped carry bedsteads, tables and other heavy articles up stairs, and while doing so was taken with sudden pain in the right groin and iliac fossa. He vomited almost simultaneously with the approach of the pain. My *confrere* was not at the patient's home at the appointed time but had left word with the family that if I arrived before he did to go on with the examination so that no time need be lost. I therefore carefully examined his patient. He was nauseated, and excruciatingly tender over the right iliac fossa. There was slight œdema, the tissues were red and abdomen tense. The slightest touch caused him to cry out with pain. The right thigh was somewhat flexed. A small, distinct projection was plainly visible, correspondiug to the location of the internal ring, also felt the little tense elevation with my fingers; it was round, circumscribed, perhaps two-thirds of an

inch in diameter at its base. Being satisfied that it was a hernia, possibly an enterocele or epiploicele, I awaited the coming of the attending physician. Upon arriving his first question was: "What is your diagnosis?" My reply was equally laconic: "Hernia." He responded, "We do not agree. In my opinion it is a perityphlitis." Reasoning was useless. I proposed anæsthetizing the patient with a view of reducing the hernia and of satisfying my colleague of the correctness of the diagnosis. He administered chloroform. Unwisely, when the patient was relaxed, instead of showing the tumor to my friend while the limbs were in extension, I flexed the thighs upon the abdomen when a distinct "gurgling" took place and the tumor was gone. My *confrere* disputed the presence of the tumor, which he now could readily do. Nevertheless all distress, vomiting and nausea ceased. A little tenderness only remained and the patient was out of bed in a few days ready to attend to business. There has been no recurrence of symptoms although three years have elapsed.

In hernia the attack is always sudden, vomiting more frequent, and follows the pain immediately as a rule. The distress is greater, the tender spot is located below the McBurney point. The constitutional symptoms are more profound from the start (unless perforation has occurred in appendicitis), the patient will bear less manipulation. In perityphlitis one can usually press a little upon the abdomen without giving extreme pain. Tympanitis follows much quicker in case of hernia, while constipation is almost constant. I have known of several cases of perityphlitis to have open bowels before opiates were administered, but have never known a movement to occur in incarcerated hernia, except where there was an accumulation in the rectum or colon.

Lumbar abscess and osteomyelitis of ilium need only be mentioned in this assembly, as also the diseases in the pelvis of females, already alluded to. Volvulus and intussuscep-

tion must not be overlooked. Limit of time forbids my going further into detail.

In this connection permit me to report several of the more severe and interesting cases which have come under my observation, three of which, commencing as a "cæcitis," were followed by perforation of the cæcum and peri-cæcal abscess.

Case I. Male aged fifty-two years. Relapsing perityphlitis. Was called to see this case in December, 1890, by Dr. Joseph Haven, who had already made the diagnosis and recognized the gravity of the situation. The patient was in a state of low muttering delirium. Pulse 120, very feeble and small. Temperature 104 degrees F. There was great œdema of the superficial tissues of the right iliac fossa extending towards the navel. There was no tumor to be felt. This was on the evening of the 7th day. He had vomited more or less during the last three days. We concluded that an operation was advisable, but were guarded as to the prognosis. His wife did not wish to bear the responsibility of giving her consent to the operation in the absence of his relatives. She told us some of them could be at his side in thirty-six hours, and if we thought it would be advisable she could telegraph at once and have them come over from Michigan, which she did. Thirty-six hours later, in the presence and with the assistance of Drs. Jos. Haven, J. D. Skeer and Frank B. Earle, I made an incision beginning an inch inside of the anterior superior spinous process of the ilium and extending obliquely downwards and inwards three inches; found the outer side of the cæcum and a large abscess beneath it in the iliac fossa. Opened it, let out nearly a pint of greenish pus from which there arose a distinct fæcal odor, found débris of necrosed tissue. The cæcum was thickened, its vermiform process was firmly imbedded in exudative material behind the gut, and perforated near its base. As the patient was rapidly weakening I hastily washed out the abscess cavity, inserted a drain and closed the wound with silk. For about a week

there seemed little hope of recovery. The temperature fluctuated between 96 and 97 degrees F. Pulse 100 to 144. There was constant delirium, with cold extremities. The abscess cavity healed in five weeks. After the eighth day the temperature began to rise, was normal on the twelfth day and during the following three weeks it varied between 98½ and 102 degrees F. The patient had been accustomed to drinking liquors freely. He had a contracted liver. Suddenly during the third week his legs swelled enormously; ascites followed, and when we began to feel that there was going to be a cure to report our hopes all but vanished and an unfavorable prognosis was given. After six months there was a surprise in store for his friends and doctors. Suddenly the dropsy began to subside ; in three or four weeks more he walked out of doors, and is to-day—two and a third years from the time of operation—a strong man, feeling better than for many years. He sailed on the lakes last summer, having command of his own vessel. There is no tenderness or tumefaction to be felt in the iliac fossa. No tumor was discoverable at the time of operating and yet there was so much inflammation and œdema of the superficial tissues as to lead me to look for pus under the abdominal wall. No enterolith could be found.

Case II. *Perforating Cæcitis with Pericæcitis.*—Mrs. T., aged twenty-three years. Married about three months. Six weeks (supposedly) in pregnancy. While visiting relatives in a suburb of the city one Sunday afternoon of August, '92, was taken suddenly ill with a pain in the right iliac fossa, accompanied by vomiting. Her husband immediately brought her home in a carriage, a distance of eight miles, and called the nearest physician, who treated her for "inflammation of the womb." Thursday morning I was called to see her. At this time there was great tenderness in the right iliac fossa and considerable tumefaction in the superficial tissues over this area. The McBurney point could be made out and the right rectus muscle was contracted with the right thigh flexed.

No tumor could be felt. She had not menstruated for six weeks. Had always been regular "to the day," as she expressed it. Her temperature was 101 degrees. Nausea was almost constant. Never had had any local disease. Bowels were regular before this sickness, but were constipated now. My diagnosis was perityphlitis. Treated the case with opiates, administered per rectum, and local fomentations. This diminished the tenderness and nausea. The temperature, however, remained at 101 degrees, Fahrenheit, all day; on Friday it dropped one degree; Saturday morning it was 99 degrees; Sunday morning, 100 degrees; midnight, 100 degrees. At this time the patient was depressed and her features had a "pinched" expression which, to my mind, forebode no good. I immediately informed her husband that the time for operation was approaching. Monday morning at 9:30, the ninth day, with the assistance of Drs. Jos. Haven and L. B. Hayman, I cut down about one inch to the inner side of the anterior superior spine of the ilium, making an incision three inches long obliquely downwards and forwards; found the outer side of the cæcum (extra-peritoneal) and discovered an abscess behind it. There was a slight perforation of the cæcum. The appendix appeared to be healthy. The opening in the cæcum was at its back part, one inch removed from the appendix, which ran obliquely upwards and outwards behind the bowel. I washed out the abscess cavity, placed drain, and closed the perforation with a Lembert suture. The patient made a good recovery. She walked about the house four weeks later, and five weeks ago she gave birth to a fine, eight pound boy. She is in good condition. No induration or tenderness can be felt. No enterolith present.

Case III. Wesley Hospital Record, No. 530. Young married man aged twenty-four years. Ten days before he was brought to the hospital he was taken with acute pain in the right iliac fossa. His physician noticed a distinct tumor above Poupart's ligament and warned him of the possibility

of having to submit to an operation. Suddenly, on Sunday afternoon four weeks ago, tenth day of the disease, the tumor disappeared. The temperature dropped to 96½ degrees Fahrenheit, pulse became rapid, small and thready. He was then sent to Wesley Hospital, a mile distant, for operation. Having been advised of the patient's coming I immediately went to see him. Found temperature 96½ degrees Fahrenheit; pulse 120. Could hold out no hope. His wife was anxious to have the operation done. I informed her that he might die on the table. Quickly opening the abdomen in the median line, I found the pelvis filled with fæcal matter and pus. Cleansed it as rapidly as possibly with sterilized water and bichloride solution, using sterilized water again before closing the wound. Found the collapsed wall of an extensive abscess cavity with a rent over an inch long on its inner side.* Passed a finger through this tear and felt a ring-like opening in the caput coli, through which the fæcal matter had escaped. Washed out the cavity, closed the hole in cæcum with Lembert suture, using silk, carried drainage tube through the abdominal wall above Poupart's ligament. Closed the abdomen with silkworm-gut.

Patient died immediately after operation was finished.

The appendix lay loose in the abscess cavity, but was not diseased within; its walls did not seem thickened. Perforation in cæcum one-fourth inch removed from appendix. I here show you a small entrolith found in abscess.

Case IV. Wesley Hospital Record, No. 574. Lady aged forty-seven years. Married. Had several children grown up. Cæcitis recurrent. Was sent to the hospital on the 8th day of November, 1892, by Dr. Danforth, with a view to operation. She had the usual symptoms, which commenced on the 4th of November. On the 9th of November, late in the evening, her symptoms, which were somewhat mild before, suddenly grew more severe, her pulse and temperature rose simultaneously. The interne telephoned the

*See illustration I.

fact to the doctor, who kindly invited me to see the case with him. At 10:30 P. M. Dr. Danforth cut down to the outer side of the cæcum, making an incision three inches long. Found sero-pus in the iliac fossa, from which there arose a

FIG. I.

1. Cæcum.
2. Perforation of the cæcum through which enterolith and fæcal matter escaped.
3. Enterolith.
4. Perforation of abscess wall through which fæcal matter and pus escaped into the pelvis.
5. Vermiform process.
6. Abscess wall.

fæcal odor.* After dilligent search we discovered a pin-head opening at what appeared to be the outer side of the cæcum; the inner side of this opening was blocked by an enterolith which the doctor kindly loaned me to exhibit to you. As

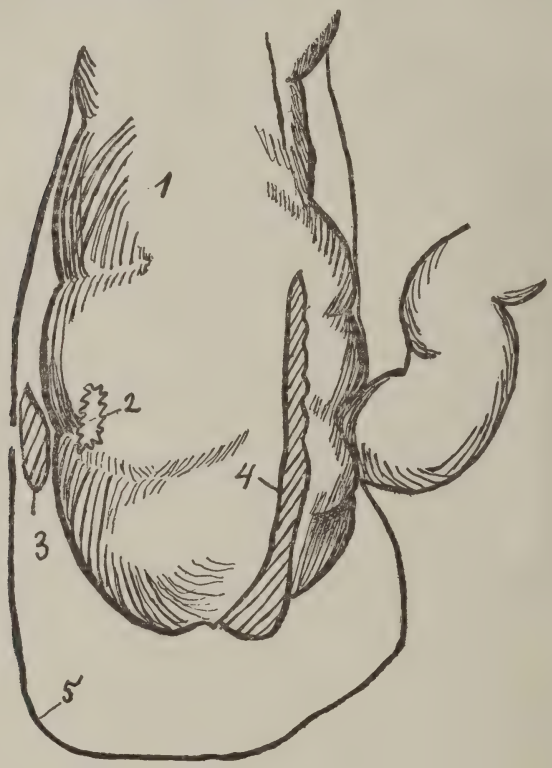

FIG. II.

1. Cæcum.
2. Cicatrix of perforation of the cæcum.
3. Enterolith which passed through 2.
4. Vermiform process.
5. Sac of abscess cavity, the wall of which is perforated at the outer side of the enterolith, No. 3.

The enterolith consisted of organic fæcal matter with inorganic deposits.

* See illustration II.

there was so much pus issuing from the apparent opening in the wall of the bowel, we concluded that it might be the wall of an abscess cavity. Acting upon this idea Dr. Danforth enlarged the opening longitudinally, inserted his index finger through it, and felt the caput coli floating in pus. He then washed out the cavity with bichloride solution. He now thoroughly examined the tissues. The cæcum presented a cicatrix on its outer wall an inch above its head, through which the enterolith had evidently made its exit. This cicatrix was directly opposite the opening in the abscess wall already mentioned, which was blocked by the enterolith. The appendix was in contact with the inner wall of the bowel extending upwards. It was apparently healthy, but was bound against the intestines by the lymph which coated the latter. It had a perfectly sound appearance. The abscess, beyond question, was due to the perforation of the cæcum with the escape of the enterolith, and other matter, from the gut. The patient rallied somewhat two hours after the operation, but soon the circulation again weakened and she died six hours later. Autopsy revealed adhesions of small intestines to the inner wall of the abscess, and a slight perforation of the peritoneum three inches above the pin-head opening in the abscess wall. I am indebted to Dr. P. C. Boomer, our interne, for drawing.

Here we have three cases in which the vermiform appendix was not directly involved in the inflammation with perforation of the cæcum, which surely could not be appropriately termed appendicitis. I therefore think it proper to name them *perforating cæcitis* followed by *suppurative pericæcitis.*

These are perhaps exceptional cases. They, however, go to prove that all of the varying conditions that exist about the cæcum, under the different terms in use to designate the disease, are not yet fully understood, and that we must be prepared to meet anything excepting a stereotyped form of appendicitis. In addition to the above I herewith present

a few cases reported by different surgeons, which may add interest to the report.

Dr. Lees (*London Lancet*, February, 1892) reported four cases of perforated appendicitis in all of which the symptoms were remarkably mild.

Case I. Male, twenty-seven years old; had very slight pain in right iliac fossa; vomited on the fourth day. No tumor present. Died on the fourth day.

Case II. Male seventeen years old. Was seen first on the third day. Complained of pain first about the umbilicus; it soon settled to the iliac fossa. There was no lump to be felt. Died of perforation of peritoneum on the fourth day.

Case III. Woman thirty-six years old. Local tenderness; bowels loose, which led attending physician to treat her for typhoid fever; vomited on the third day. Died on the fourth day. Appendix was ruptured in two places.

Case IV. Boy aged eighteen years; waiter. Was taken with sudden pain while waiting on table. There was a slight tumor over Poupart's ligament; was operated upon *eight* hours after pain was first felt. Abscess was found perforated discharging into pelvis. Patient recovered.

Here we have four cases with one recovery. Delay may here have led to the death of three, and yet the indications for operating were not clearly defined except in Case IV. Dr. Lees concluded from this experience that the character and grade of the symptoms have to be the measure of the need of operation, and yet in the first three cases these were not strong enough to lead to operative interference. He says further, and I agree with him, cases having *acute* abdominal symptoms ought to be examined under anæsthetic, and to this he might add, be prepared to operate.

Mr. Page, in *London Lancet*, Feb. 29, 1892, reported a relapsing typhlitis in a medical student in which the appendix was simply kinked and bound to a coil of intestine by adhesions. It was filled with mucus. He removed the appendix, completely relieving the patient after five years of suffering.

Dr. Powell (same issue *Lancet*) urges that there may be cases of tumefaction in the iliac fossa, unassociated with disease of the appendix, as a local affection of the caput coli for which a purge is an efficient remedy.

Treves claims that the shortness of the mesentery to the appendix favored its falling over and forming loops in which concretions lodge.

Prof. Axel Iveson (*Deutsche Medicinische Wochenschrift*) recently removed the appendix from two cases. In each the process was as thick as the thumb. The walls were greatly thickened. They contained no concretions; they were adherent to the cæcum and small intestines, and gave evidence of severe catarrhal inflammation. He claims the pathology of the disease has its origin in catarrhal inflammation of the mucous membrane, which at first augments secretion, and causes great swelling, especially about the valve of Gerlach; stenosis takes place here, the inflammatory process extending through the walls of the appendix soon causes adhesions to occur; the epithelium softens, disappears, and ulcers form. Now the secretion diminishes, the swelling subsides, in many cases the lumen is re-opened and resolution takes place. This he claims is the case with such as recover.

H. Einhorn (*Munchener Medicinische Wochenschrift*, No. 7, 8, 1891) found 100 cases of peritonitis from perforation of the vermiform appendix out of 18,000 autopsies in the Pathological Institute of Munich. He says of perityphlitis ninety-one per cent. of the cases are due to perforation of the appendix. Primary perforation of the cæcum occurs in only nine per cent. Perforation of the vermiform process is seldom caused by the presence of foreign bodies, and in such cases usually by hardened and inspissated masses of fæcal matter.

Herman Mynter (*Deutsche Medicinische Wochenschrift*, April, 1891) asserts: Perityphlitis finds its start either in the cæcum or appendix, with predilection for the latter. Catarrh of the mucosa of the cæcum, with dilatation, is frequent here;

the inflammation extends into the appendix, it now becomes distended, Gerlach's valve is stretched open so that the contents of the bowel enter with ease where they form concrements; the fluids being absorbed leave the solids inspissated, which are the mechanical causes of inflammation and relapses.

In view of the fact that so many different conditions are found with similar symptoms and all have been called appendicitis, there is no longer need of wondering at conflicting statements concerning the treatment. For under the one term we are treating altogether different states, and disagreements will take place until we can differentiate positively between the different pathological conditions that exist in the iliac fossa within or about the caput coli and its appendage, and yet it will not do to wait for a further solution of how to diagnosticate the disease. In the interest of the patient prompt action is necessary. It has been claimed by McBurney and others that twenty per cent. of cases of appendicitis die under expectant treatment. It is our duty to save as many of this twenty per cent. as possible. The question should no longer be, shall we operate early or late, but operate *in time.*

Until more exact data can be given, it seems to me no better rule can be adopted than that of Keen, of Philadelphia (*Annals of Surgery*, April, 1891):

"That by the second or third day, and with strong reasons later, the operation should be done if the following indications are present: 1. If there is abdominal pain most marked in the right iliac fossa. 2. If there is rigidity of the right abdominal wall. 3. If there is fever up to 100 or 102 deg. F. 4. If, by minute and careful palpation, tumefaction and increased resistance can be discovered, with possible dullness and rarely fluctuation. 5. If there is œdema of the abdominal wall."

Pus will generally be found, but it is possible that there may be none. If pus is present, the cavity is to be evacuated and washed out with great care, lest the frail wall will be

broken down and general peritonitis ensue. If there is no pus, the appendix should be sought, and if it is swollen, thickened, distended, the seat of irritation or otherwise abnormal, even without perforation, it should be tied and cut off, stump cauterized, inverted and covered with peritoneum by Lembert sutures through the outer layer of the cæcum. Moreover he would be decidedly in favor of operation, even if there were present only iliac pain, tenderness at McBurney's point, rigidity of the abdominal wall, moderate fever and increased resistance without tumefaction and dullness, or previous nausea and vomiting.

The carefully thought out rules, as given by Keen, can hardly be improved upon by our present knowledge of the subject, and I most heartily endorse and recommend them, but would add, if the case is one of perforated cæcitis, close the opening, if possible, with Lembert sutures. Finally, I would be strongly in favor of calling all inflammatory processes about the head of the colon, in the iliac fossa, *cæcitis* and *pericæcitis*, unless we are *absolutely* positive that some other disease is present. If eighty per cent. of the so-called cases of perityphlitis and appendicitis recover spontaneously, few leaving any pathological conditions as sequelæ, we may feel perfectly assured that a very large majority of them were simply cases of cæcitis or pericæcitis.

BURNS AND THEIR TREATMENT.

BY C. W. HALL, M.D., KEWANEE, ILL.

In taking up the subject of burns I want to remind you that it pertains to an accident that is one of the most frequent, most agonizing, most terrible in its results, that the surgeon is called upon to treat; and yet in spite of its frequency and agony, we have neglected it, and our profession has run wild over different "otomies" and "ectomies" which not one doctor in a hundred is called upon to perform, and "burns" is standing where it stood fifty years ago. Progress has been made all around it, but we treat burns as did our grandfathers, with "carron oil" and bandages, with the same degree of comfort to our patients and the same degree of profit to the undertaker. This should not be so, and I hope my paper will occasion more interest in this most practical subject.

The general practitioner meets with this accident as frequent as with fractures, or nearly so. We know it is attended with the most intense suffering, and the death rate is very high; and this being so, where can we search for a treatment of a disease that will bring as much benefit to humanity as a new and modern treatment of burns—one in keeping with our progress in other lines?

I was first impressed with the inefficiency of the common way of dressing burns by seeing a patient sent into convulsions by the removal of a dressing of carron oil with bandages and absorbent cotton, and I firmly resolved, if we ever got that dressing off without killing the patient, such a dressing should not be reapplied. I reasoned that a dressing that causes such intense irritation upon removal surely is not a

sensible dressing, even though our text-books say so. A dressing, to be ideal, should be removed with little or no pain, and should not tear or destroy the tender granulations springing up; for if it does, it destroys, in a brief moment, the work of days.

I take nature's dressing for my ideal dressing of a burn. What is it? a blister. Plainly speaking, the inflamed and sensitive tissue beneath is covered over with a serous fluid that is soothing and grateful; a delicate varnish that acts as a protector; over this is the skin—a thin covering which excludes air, moisture and cold, and yet admits light—and being practically impervious to moisture, it retains beneath it the animal fluid, with which it gives to the tender tissue a protection nothing else can give.

Now I will briefly outline the dressing I recommend:

First, I want to pass around this waxed paper, such as we all can get at any grocery store, for it is the paper grocers put over the butter and lard when they send it out. This is my covering to the blister—the skin, if you please—it answers the description of skin better than anything I ever saw or read of. It is thin, firm, transparent, excludes air and moisture, thus compelling the animal fluid beneath to constantly bathe and moisten the parts, there being no chance for the fluid to be absorbed as it is in ordinary dressings. This dressing is cheap and clean, and when once used can be thrown away without bankrupting the doctor. It covers all the ground of oil silk, and more too. This we can always get; the silk we cannot. This much for the covering to the blister.

For the fluid beneath I have tried almost everything; but nothing in my experience equals the old-fashioned goose oil. It is an animal oil—is very soothing, and is permanent; does not become rancid, and it holds its virtues longer than any other application I have ever tried. Freely pouring this oil over the paper, and applying it to the inflamed surface, you are at once struck with its simplicity and thoroughness, while

your patient is struck with its comforting and soothing properties, and when it is removed the patient is actually unconscious of pain; no tearing of granulations follow, and as it comes off just like a blister peels off, you cannot help but say, "Eureka."

The paper can be cut any shape and size, so it can be applied smoothly over all parts of the body. After applying the oil it becomes perfectly transparent, and you can watch progress of the granulations beneath as though nothing intervened. Should anything unhealthy appear, you merely raise that portion of paper overlying the diseased tissue, treat it as your judgment dictates, with calomel, iodoform, bismuth or soda, and reapply the paper without molesting the balance of the inflamed surface—a much needed improvement over the old method, where all had to be removed to treat any part, no matter how small.

I find iodoform as efficient as any application for unhealthy granulation. Generally speaking, this dressing is not to be removed until the secretions beneath loosen it up, then it is very readily removed and reapplied.

One of the most trying periods during any treatment of burns is the itching period, and with some the hardest to bear. With the old method nothing could be done. With this, take a stiff hair brush and gently rub over the paper, and if your patient does not express his gratification it will be because he is speechless with ecstacy. If the gentle friction with the brush does not suffice, raise the paper and paint the parts with a weak solution of cocaine. I have formed an opinion, I know not how true it is, that bismuth applications increased the tendency to itch, and I use the other medicines in preference on that account.

I recommend this dressing of burns because it most nearly approaches nature's dressing, and she is our guide. When we simulate her we are on the right track, and after treating burns on this principle, if your experience be mine, you will be pleased for trying it.

THE DEFLECTED SEPTUM AND ITS REPAIR.

BY J. HOMER COULTER, A.M., M.D., PH.D., CHICAGO.

The septum in health, like the vermiform appendix or tonsil, does not play a very important role in the human economy. But when a pathological factor is admitted, it then becomes a matter of both importance and interest, and as such exerts frequently a very potent influence on respiration, phonation and other functions, as well as a pernicious effect on all contiguous structures.

Authorities differ as to the frequency of abnormal septum; from Heyman, who claims 99%, down to the statistics of Harrison Allen, Bosworth and others which give it a creditable persistency of 65% to 75%.

However frequently though it may appear, it is not my purpose to consider those cases which, while they may be decided deflections, give rise to no morbid symptoms of consequence. Then, also, there may be deflections which have never, or not for years, been a source of inconvenience, will from traumatism or other exciting cause suddenly assume a pathological condition demanding surgical measures for relief.

As to the etiology of the condition there are various theories, no one of which seems tenable in every case. It is probable that no one cause is superlatively efficient as an etiological factor in the production of deflected septum. The most generally accepted factor is traumatism ; along with this it is held that irregular development of the cartilage and bony structures contiguous is equally potent. Hypertrophied turbinate adenoids, scrofula, have each been held responsible

for the condition, even paresis of the nasal muscles has been indicated. Among all these there may be sufficient cause for almost any possible case. Those who claim traumatic origin, are confronted with the fact that it is not frequently seen under eight years of age; and while it is true that a hyperæmia and hyperplasia might follow at a considerable time after the trauma, yet there is a chain of opposing facts still unexplained if this theory be the correct one. Why should the bumps on baby's nose not show their effects until eight to fifteen years thereafter, when the cartilage has even more resiliency than in infancy? Or why should not the articulations show a more frequent result of these infant thumps, for the osseous structures are then much more soft and pliant than in later years? Or why is it more usual in the superior races? Or in man than in woman? Or if it be due to traumatism, why do we not see the interarticular fibro-cartilages constantly deviated? Under the same laws these cartilages would by puberty be but a jumbled mass of enchondroma. It seems more probable that a study of the comparative anatomy along with the traumatic possibilities and probabilities will explain the matter in a very large number of these cases if not all. But that study of comparative anatomy should not be limited to the bones alone; let it include the membranes as well; combine with it too, pathology of the parts, and then the absence of perfect symmetry and complete utility will not always be due to the absence of harmony in the anatomical development. Such a view precludes the utilitarian theory that nature is ever conservative in the expenditure of her forces, and ever economical. This argument, to my mind, is too incongruous with nature's methods in all other portions of the human anatomy. To presume that in 70 to 90% of nature's efforts to produce a creditable man she has quite succeeded in her endeavor except as to the nose, and that is almost invariably crooked, begins to assume the ridiculous. It *must* rather be due in a great measure to

some race individuality, custom, habit or surrounding. This would be a more tenable theory than that accusing nature.

True enchondroma or thickened septum must not and cannot well be confounded with deflection, although the symptoms and sequellæ are practically the same ; and in treatment require much the same methods of procedure.

In those cases where there is more than ordinarily highly arched palate associated with a strong osseous development generally, there is then, I believe, a deflection due to excessive bony development, but so because there will be found present an hereditary trait or pathological condition bordering on malformation.

In stenosis of any degree there is created in each inspiration, within the cavity, a more or less complete vacuum. Thus then the atmospheric pressure is to that degree increased, and would be a constant force of no inconsiderable gravity. And further, I hold that such a force would be more efficient in producing structural changes in the cartilaginous septum, than would a more violent force suddenly applied, because the natural cartilaginous resiliancy would more easily recover and throw off the effect of the latter.

Chattellier concluded that there are naturally two weak spots in the cartilaginous septum, one from the thinning out of the perpendicular near or at its center, the other at the articulation of the perpendicular and the vomar.* These weak portions are weakest in childhood and hence most easily affected. A very slight hypertrophy of the turbinate prominences may produce a sufficient degree of stenosis to make a vacuum, and result as heretofore described. This cause is scientifically equivalent to traumatism, differing from a blow on the nose only as to persistency of the force rather than as to violence.

At the same time and along with these conditions, must be taken into consideration those less potent, but scarcely

* Transactions of Paris Soc. of Laryngol. and Rhinol.

less important causative factors, as direct trauma, improper nutrition, adenoids, persistent excessive hypertrophies or any other condition which in any degree obstructs free respiration. Then, too, the strenuous diathesis and syphilis each play their accustomed role when present. My argument then is that, 1, in many cases, though not invariably, rhinitis is the cause of and not the result of a deflected septum. 2, That simple traumatism is not, as usually understood, the most frequent cause, but that it is frequently an important factor, especially when the deflection is found in very young patients. 3, It is not found in infancy because the turbinate prominences have not usually sufficiently developed to produce an effective stenosis. 4, If, as some claim, it be the result of hypernutrition, why do these same individuals operate before there is complete development, and yet not expect a return of the condition? But whichever of the theories or arguments one may think offers to his mind the most satisfactory explanation of the etiology of the condition, he should accept, and with it the realization that he is not without the support of eminent authority, whatever may be his ideas.

We do not *know* so much of the cause or causes, but of the results both general practitioner and specialist have frequent and amply positive proofs. Some of these I may mention as, 1, Deformity of the nose and face, sometimes extending to or occuring in the chest, resulting possibly in bronchial emphysema, cough, marasmus or even melancholia. 2, The voice frequently suffers*. 3, Many cases of laryngeal and pharyngeal affections are clearly traceable to a defective nasal passage. 4, Asthmatic conditions are not an infrequent result, and are as well the least promising of brilliant operative results. I can subscribe to the fact stated by Bosworth that partial deafness may be cured by correction of a deviated septum. Two cases in my practice in the past year have thus happily resulted, and a third I was likewise familiar with in dispensary practice.

* Carl Seiler—Archives of Laryngol, Vol. 3, p. 24.

As to the method of repair—it is unnecessary to review the minutia of all the proposed methods. They are well known in general, and many of them should not be better known specifically. With Blandin's punch, Gibbon's perforated metal tubes, Major's hooked knives, Jarvis' transfixing needles, Curtis' trephines, Seiler's chisels and gouges, Bosworth's saws, then, too, the knives and punches and forceps and spuds galore, one would think the operation might be well done, if the armamentarium possibly obtainable be a factor.

Almost invariably the thing to be advised is removal. The particular method of removal cannot be determined except for the individual case, so far as the minutia is concerned. Cleanliness is an essential, and in certain cases will, I believe, be better than any operation. Along with this cleanliness, by the Dessor cup or douche, a systematic nasal muscle massage and training will do much. Use only bland solutions medicinally, and the cautery if hypertrophic rhititis be present; for, if my former theory be a tenable one, the correction of these hypertrophies may prevent a deflection.

In certain cases where there is but slight hyperplasia, then a forcible return of the deviation, if not very extensive, by the flat-faced forcep or other means, and kept in place for a week, will give very satisfactory results. The septal punch has quite properly been relegated, let us hope, to an asceptic desuetude. To employ the punch is a confession of inability to employ not only more delicate and cosmetic, but much better means, perforation of the septum perforce resulting from the use of the punch. In all operations on the septum the greatest care should be taken to avoid a perforation of the concavity with any instrument while operating.

As to the operation itself—for in these cases nothing else is to be advised, as a rule, as I have previously said, the punch is not frequently used, but the much more delicate, scientific and satisfactory operation of complete removal is performed. I will briefly give the points in the operation be-

cause in the observance of these seeming details lies the success of the operator. Where the deviation is well anterior, or involving merely the alæ, it is very much simplified, because of convenience in operating and after treatment as well. Until recent years but little attention was paid to the preservation of the mucous membrane, when operating on a deflected septum. And many, if not all the instruments devised contemplated simply abscision of the hyperplasia.

But if the mucous membrane can be preserved and its functional activity thus continued, no one will doubt its advantage. Then, again, if the offending protuberance be high up, destruction of the mucous membrane would necessitate interference with some branches of the olfactory nerve, and it is not improbable that the irritation thus produced would give rise to troublesome asthmatic symptoms. Furthermore, destructive or obstinate ulcerations will not infrequently supervene when the membrane is removed along with the cartilage. Dr. Ingals some years ago described a method of removal* which has yet to be improved upon. A linear incision is made along the ridge of the prominence, through the mucous membrane, then, with some blunt instrument (for which I have had made an instrument quite similar to the dentist's burnisher, a sort of spud, but made with a large handle, in order that it may be held firmly in the hand; the handle set at an angle of about 30 degrees, thus out of the way)—with this or any suitable instrument the membrane after the incision is made can be well retracted from the entire portion to be removed. Then with the nasal saw, knife, burr or cylindrical saw, whichever one is most suitable to the case in hand, remove so much as is necessary, and I should say that one is most suitable which will leave the smoothest possible surface upon which to return the membrane. The hemorrhage in these cases is usually quite free, but rarely alarming. After removal of this V or wedge-shaped portion, return the mucous membrane to position, and

* Amer. Laryngol. Soc. Trans. 1885.

then with a long narrow scissors or knife trim off as much as necessary of the superfluous membrane. Then *thoroughly* cleanse the entire cavity, being most particular to remove all spiculæ or bone dust, along with the blood clots, insufflate under the edges of the wound, iodol, dermatol or other such preparation. Then return the membrane, and with dermatol or oristol gauze pack the cavity quite snugly over the seat of operation. I do not use the stitches as advised by Dr. Ingals, believing that careful packing with the gauze will give as good results, and avoid the possibility of stitch-hole abscess. In two or three days the dressing should be carefully removed and a fresh one similarly applied if necessary, though more loosely.

THE TREATMENT OF BLENNORRHŒA NEONATORUM.

BY BOERNE BETTMAN, M.D., CHICAGO.

When we consider that from 20 to 40 per cent. of our blind must attribute their affliction to blennorrhœa neonatorum, we are forced to admit one of two things. Either the treatment is not understood or it is not intelligently carried out by a great number of physicians.

Our medical journals during the last decade teem with articles devoted to curative and prophylactic measures of this disease.

Every physician at this date has been sufficiently impressed with the importance of employing preventive treatment and of the gravity of blennorrhœa neonatorum.

Notwithstanding these long-continued and oft-repeated instructions as to the method of treatment, numerous children are still deprived of their vision. Many cases of blennorrhœa are lost.

I have lately seen, in consultation and at my office, about a dozen babies where one or both corneæ were destroyed when brought to my notice.

An analysis of these and numerous other cases sent to me by physicians has convinced me that the majority of practitioners and a number of oculists are yet unacquainted with the therapeutic measures in force. Many of my colleagues had followed, as they informed me, either in person or by letter, the instructions as laid down in various text-books devoted to this subject.

The routine treatment, where any was attempted, was the

following: Frequent cleansing of the eyes with a weak solution of boric acid, cold applications to the lids, local applications once daily to the under surface of the lids of a solution of nitrate of silver varying in strength from one-half to two per cent, instillation of atropine as soon as ulceration of the cornea appeared, and then consultation with the specialist before and after perforation of the cornea.

I have made it a special point to read critically the chapter devoted to blennorrhœa in a number of text-books and essays, and will here record the views of a few.

Noyes (Edition 1890) says: As soon as the secretion grows a little thicker and the swelling of the lids grows less, so that they can be everted, we are to resort to nitrate of silver in varying strength of from one to two per cent. (5 and 10 gr. to 1 oz.).

This is not to be dropped between the lids, because it will endanger the cornea. Later on he recommends the use of the mitigated stick by skillful hands, "in the later stages of the disease when papilliform swelling is extreme and the secretion is very thick."

In gonorrhœal ophthalmia he also advises the use of a one or two per cent. solution. He discountenances strong solutions in these words: "Formerly much stronger solutions were in vogue, but they are not to be recommended, except in extreme cases, viz., four per cent."

Edward Meyer, of Paris (Edition 1887), recommends nitrate of silver 8 grs. to 1 oz., but has preference for the mitigated stick. The same treatment holds good for gonorrhœal ophthalmia.

C. E. De Schweinitz, 1892, also favors the use of a one or two per cent. solution. In severe cases the mitigated stick and even the solid pencil of nitrate of silver may be employed, great care being taken to neutralize the excess with a solution of common salt.

With reference to gonorrhœal ophthalmia, he is quite decided in his utterances: "At the proper stage nitrate of sil-

ver is the best remedy. It is rarely necessary to employ it in a strength greater than ten to fifteen grains to the ounce, but when granulations of the conjunctiva become exuberant, the mitigated or solid stick at times alone will control the process."

Schweiger, of Berlin, recommends local application of one-half per cent. solution of argentum nitricum at first, then later two and three per cent. He deprecates the use of the mitigated stick, fearing the cicatrices it might produce.

Saemich, Vol. 4, Graefe und Saemich Handbuch der Augenheilkunde, has written an exhaustive treatise on this subject. He also favors weak solutions of silver nitrate first and in aggravated cases the stick. He emphasizes the fact that the latter application be made to the retrotarsal fold only.

Fuchs' instructions are rather meager; he mentions only the two per cent. solution of silver nitrate which is to be applied twice a day when the discharge is profuse.

Theobald (Wood's Reference Handbook of the Medical Sciences) advocates a solution varying in strength from two to four per cent.

Schmidt-Rimpler's views almost coincide with those already given.

It has been thus shown that there is almost a unanimity of opinion of the various writers here and abroad regarding the strength of silver nitrate to be applied to the inner surface of the lids. The large majority are contented with a two per cent. solution and the mitigated stick in the extreme cases.

Solutions of this strength when used by competent hands will usually answer the purpose. The directions are not ordinarily explicit enough for the general practitioner. They suffice for a specialist who can take a great deal for granted.

Gentlemen, you will agree with me that a certain amount of skill is required to evert the lids and much more is requisite to bring the upper retrotarsal fold to view. Therein lies the solution of the problem.

The remedy must be brought to bear on the cul-de-sac, that lax conjunctival tissue full of folds which is reflected from the upper lid margins on to the eyeball.

Two per cent. solutions applied to the tarsal part of the lids will not answer the purpose in most cases.

The practitioner makes the application to this part of the conjunctiva with the conviction that he has conformed to the rules laid down by writers.

Soon the cornea becomes affected and the specialist is called in.

The use of the mitigated stick is a dangerous remedy to the inexperienced. If not carefully applied, sloughs may result, causing great loss of tissue and formation of cicatricial bands.

Again it has been my experience that a two per cent. solution is often not nearly strong enough to control the purulent discharge. I have repeatedly treated neglected cases when nothing weaker than a ten or fifteen per cent. solution would answer the purpose.

The main object of this paper is to emphatically denounce the idea, which prevails amongst the fraternity, that a two per cent. solution of silver is a specific for all cases of blennorrhœa neonatorum.

The erroneous impression is largely due to the meager instructions of the text-book writers, and to the fears which have been instilled into the minds of physicians through teachers, of the deleterous action on the cornea of stronger solution than that of two per cent.

These precepts have fallen on fertile ground and have so imbued the mind with the dangers attending a strong solution of silver nitrate that even a weak one is used with trepidation. The treatment of this disease does not only consist in using nitrate of silver, but in knowing when and how to use it.

To understand this more fully we must briefly consider the various stages and forms of blennorrhœa. Two great

varieties are recognized. The mild type, characterized by a slight muco-purulent discharge and little swelling of the conjunctiva; and the other more severe form, showing profuse discharge of creamy pus associated with a severe swelling of the conjunctiva and lids.

Both have a first stage of conjunctival congestion and swelling with no purulent discharge, and a second stage which only then exists, when a purulent secretion is established beyond a doubt.

The milder form of the trouble is readily controlled by cold applications to the lids, and in the second stage by the instillation of saturated solutions of boracic acid every two hours, and a daily application to the everted lids and cul-de-sac of a one or two per cent. solution of silver nitrate.

The more virulent form requires more energetic measures. During the first stage caustics *must never be employed;* they are absolutely injurious to the swollen, glistening conjunctiva. The physician must content himself with explicit directions to the nurse to cleanse the parts every hour or two with a solution of bichloride of mercury 1 to 5,000, and a saturated solution of boric acid. Cold cloths taken from a cake of ice must be placed on the eyes day and night and changed as soon as warm.

A point of great importance is to warn the attendant not to injure the cornea with pipette or brush. If the cornea is denuded of epithelium the least degree, a means of entrance is opened to the germs which rapidly multiply and cause ulceration of the tissue.

When the purulent secretion begins, then too begins the active work of the physician. The child's head must be taken between the knees, covered with a towel, the lower lid everted and the cornea covered with the upper one.

It is wiser to begin with the application of a two per cent. solution of nitrate of silver. This must remain in contact with the conjunctiva until it changes to a milky, bluish appearance. The excess of fluid is then removed with a brush

dipped in water. If the solution employed should be a stronger one, it will be well to neutralize it by washing the parts with a weak solution of salt water.

The upper lid is treated in the same manner, the cornea being protected by the drawn up lower lid.

Of paramount importance is the retrotarsal fold. The rolls of swollen conjunctiva in this seat of danger must be conscientiously cleansed and similarly treated.

If this strength of nitrate of silver solution does not decrease the amount of discharge, a stronger, six per cent., must be employed the next day, and so we must be guided as to the strength of the application by the quantity of secretion.

I have frequently employed, in dangerous cases, in rapid succession an 8, 10 and 15 per cent. solution, and feel convinced that the energetic employment of these powerful measures, and these alone saved the cornea.

If great chemosis exists at the corneo scleral margin, no delay in scarifying these parts should be countenanced. Prompt, decisive action is essential in the various stages of this disease.

The use of caustics is not recommended oftener than once every 24 hours, because it requires that length of time for the tissue changes to be effected.

Vaseline has of late years been much employed as a valuable lubricant to the inflamed conjunctiva, and as facilitating the removal of the secretion from the folds of the mucous membrane.

As soon as the swelling visibly subsides and the discharge decreases, I invariably employ hot fomentations, my object now being to hasten the elimination of broken down material and to favor a more rapid resolution. The hot applications are made two hours in the morning and two in the afternoon, the instillation of antiseptic measures being continued in the meantime.

Ulcerations of the cornea require the additional use of atropine, and in case they are of a progressive character,

application of a 95 per cent. solution of carbolic acid to the surface of the ulcer or the actual cautery.

A paper of this nature would hardly be complete were not mention made to the well-known preventive measures. I am often astonished at the indifference shown by the profession to these thoroughly tested and efficient means.

The statistics of the largest hospitals in the world have proved their use beyond a shadow of a doubt. I will not tire you by repeating this long list of tables, but will content myself by assuring you that the percentage of infection of the eyes of new born children has fallen in institutes where these measures are systematically enforced, from five and ten per cent. to a fraction of one per cent.

My friend Dr. Mitchell kindly compiled the obstetrical cases which were found in the Cook County Hospital during a period of five years, from 1883 to October, 1888, 1,232 cases. Only two cases of blennorrhœa neonatorum are recorded. During most of the service Houseman's method only was employed, and it was found sufficient.

Houseman's method, which consists of vaginal douches of a one per cent. solution of carbolic acid, or a weak solution of bichloride before labor, is a simple way of rendering the genital organs aseptic. Every prospective mother should be instructed as to this method by her accoucher. A double precaution is Crede's method. A single drop of a two per cent. solution of nitrate of silver is to be instilled into the eyes of every new born child.

I feel confident that we specialists would be called to attend fewer cases of blennorrhœa neonatorum if these rules were universally enforced, and I am equally convinced that fewer cases of ulceration and loss of the cornea would ensue if the use of a stronger solution of argentum nitricum at times were advocated by teachers and writers.

DISCUSSION.

Dr. Henry Gradle, Chicago (opening the discussion):

It seems to me superfluous to point out to the general practitioner the two evils between which he has to steer in cases of confinement. If he does not use nitrate of silver he runs a great risk. In European cities, in large towns, it is said that about eighty per cent. have had gonorrhœa; that of this proportion one-sixth have never been entirely cured. About fifteen per cent. of those that are entering wedlock have some slight form of the disease and infect their wives. Gynecologists claim that one-sixth of all cases are due to the gonorrhœal virus. This explains the proportion of cases of blenorrhœa neonatorum, and where prophylactic measures are taken the number of cases is much less. It is true, of the number of children affected with blenorrhœa neonatorum, perhaps only eight per cent. have lost their eyes.

Dr. W. F. Coleman, Chicago:

I simply desire to emphasize the remarks made by Dr. Bettman, and to make a confession. Up to last year I have never had a patient get worse under treatment for ophthalmia neonatorum. The possibilities of recovery are marvelous. My own practice was to use a solution of nitrate of silver not stronger than two per cent. During the last year I have lost seven eyes in four children, three of whom died. Two of the parents were being treated for gonorrhœa. When I used a ten grain solution of nitrate of silver, the purulent discharge seemingly went on, little checked, then I used pyoktanin, bichloride of mercury, eserine, hot and cold water. I called Dr. Bettman in consultation in two cases, and he advised a thirty grain solution of silver nitrate. The result was excellent; the secretion stopping within twelve hours. The cases treated were all cachectic, and I doubt if any treatment would have saved the eyes. One child died of meningitis, one of septicæmia, and one of bronchitis. The fourth lived with one eye lost and with good vision in the other eye.

WHAT BENEFIT CAN EAR PATIENTS DERIVE FROM NASAL TREATMENT?

BY DR. H. GRADLE, CHICAGO.

The causative relation of naso-pharyngeal anomalies to diseases of the middle ear is so evident and well known that you will find reference to it in all text-books of otology. To what extent, however, we can benefit ear patients by treatment of their nasal and pharyngeal disorders is a subject on which views still differ. While all the systematic treatises written by European otologists discuss the treatment of nasal conditions in connection with catarrh of the middle ear, they speak of the nasal anomalies as an occasional cause and as a condition favorable to the development and maintenance of the ear disease rather than as the regular starting point of the trouble; and until recently it was not the practice in most European ear clinics to pay much attention to the nose except when compelled by urgent nasal symptoms.

On the other hand, American rhinologists have insisted very properly, that since middle ear diseases are usually a complication of nasal disorders, the primary trouble should receive full attention. Indeed, the drift of the discussion at several public meetings of rhinologists has been such as to create the impression amongst general practitioners that ear patients require nasal rather than aural treatment.

In view of this divergence of opinion and practice I wish to present to you the conclusions which I can draw from fifteen years of personal experience in this work.

In starting with the proposition that *most* affections of the middle ear are secondary to naso-pharyngeal disturbances, I

refer by "most," not to the number of patients, but to the types of ear disease, for there are certain forms of disease of the middle ear which have no etiological connection with the naso-pharynx. As such independent forms of middle ear disease I would rank progressive sclerosis of the middle ear, tuberculosis of the walls, rare instances of metastatic intra-tympanic suppuration due to traumatism or infection through the drumhead. But with these exceptions *all instances of disease of the middle ear are the complications of previously existing naso-pharyngeal anomalies.*

It is true that the etiological view cannot be tested in every case met in practice, but its correctness can always be shown whenever a patient is observed at the time his ear trouble begins.

The relation of the type of ear disease to the particular form of naso-pharyngeal disorder has not been emphasized sufficiently in the literature. My own experience can be summarized in the following propositions :

1. Acute pharyngeal inflammations cause either suppuration or catarrh with serous effusion into the tympanic cavity.

2. Chronic naso-pharyngeal anomalies lead to the proliferating or adhesive form of middle disease, the so-called dry catarrh of many authors.

3. Whenever an acute catarrh has been started in the middle ear by an acute naso-pharyngeal process in a patient presenting persistent anomalies in the nose or pharnyx, the tympanic disease will follow a protracted chronic course. Moreover it is in patients with persistent lesions in the nose or pharnyx that acute disease of this space is most apt to lead to middle ear complications.

The therapeutic influence of nasal treatment upon ear disease can be presented to best advantage by passing in review the separate naso-pharyngeal disorders.

A. The acute inflammation of the naso-pharynx in scarlatina, measles and diphtheria follows a self-limited course,

which we cannot abridge with our present means. Hence in these instances nasal treatment is of very little service for the relief of the ear complications. If the involvement of the middle ear appears as a suppurative inflammation, it will as a rule become chronic, except in very young infants, unless locally treated. If it takes the form of serous catarrh, it will generally get well spontaneously, but always quicker and more reliably with aural treatment than without the latter. The same considerations apply to ear complications in acute tonsillitis and acute coryza. But if there exist any nasal obstruction or enlarged pharyngeal or faucial tonsils, tonsillar inflammation as well as nasal catarrh, be the latter idiopathic or an incident in influenza or any other infection, can take on a chronic course. In such case the catarrh of the middle ear is also very likely to become protracted and aural treatment alone will not often succeed unless the naso-pharyngeal inflammation be removed.

B. Of chronic lesions the most important one is the enlargement of the pharyngeal tonsil, commonly known as adenoid vegetation. It is only in rare instances that this condition does not lead to middle ear complications. The least frequent of these is the proliferating form or the "dry catarrh." I have observed it as a consequence of enlarged pharyngeal tonsil only in older children or after puberty, and have found it scarcely affected by purely aural treatment.

But it always ceases to progress after the pharyngeal enlargement is removed, unless other retro-nasal lesions are present. Its occurrence seems to depend on the retro-nasal catarrh maintained by the enlarged tonsil.

To what extent, however, the morbid changes in the middle ear and Eustachian tube can recede in these instances depends on the length of time they have existed.

More common than the proliferating form are acute infections of the middle ear, occurring whenever any acute inflammation takes place in the nose or throat of patients with adenoid vegetations. In such patients the acute middle ear

inflammation as a rule turns into chronic processes. Aural treatment will generally cure a suppurative otitis, as well as a serous catarrh of the tympanic cavity, even without treatment of the pharynx. But relapses are so common that the removal of the enlarged pharyngeal tonsil is an unavoidable duty. The performance of this operation, one of the most satisfactory of all surgical procedures, generally suffices for the cessation of any complicating middle ear catarrh, although the cure of the latter can be much hastened by aural treatment. But in case of suppurative otitis, the removal of its starting cause in the throat is not sufficient for a cure; the otitis itself requires local attention.

C. Chronic anomalies of the faucial tonsils are not as common a source of mischief in the ear as is enlargement of the tonsil at the roof of the pharynx. The influence of chronically inflamed or enlarged faucial tonsils upon the ear seems to be an indirect one, by maintaining persistent pharyngeal irritation. Whenever this exists, removal of the tonsil enhances the possibilities of aural treatment. But the operation on the tonsils does not by itself exert the prompt curative influence upon the ear complication, which is so striking after the removal of adenoid vegetations.

D. The chronic, but severe nasal irritation in ozæna, nasal polypi and syphilitic ulceration results often in a protracted catarrh of the middle ear with effusion. In these conditions ear treatment alone gives only palliative results, while after the cure of the nasal irritation a permanent recovery from the middle ear catarrh can be looked for if proper local measures are continued.

E. The most common cause of the often intractable proliferating or adhesive forms of middle ear disease is the so-called naso-pharyngeal or retro-nasal catarrh. There exists much confusion amongst different authorities as to what constitutes naso-pharyngeal catarrh and a variety of morbid processes have been described under this head. It is needless

to quote all different views on this subject since you can find them well summed up in Bosworth's treatise on the nose. My own experience has taught me to sift clinical observations in the following manner:

The symptom common to all disorders of the posterior part of the nose and nasal part of the pharynx is the accumulation of viscid secretion in the space above the soft palate, and upon the presence of this symptom we must base the diagnosis of retro-nasal catarrh. But we can distinguish between various conditions which give rise to this symptom. One of these is a subacute inflammation of the upper pharnyx characterized by redness of the mucous membrane and the presence of a purulent secretion. This form of disease has in my experience been easily cured by astringents, except where there is nasal stenosis. Whenever I found ear complication it was the serous catarrh which followed the same course as the pharyngitis and was stopped by the cure of the latter. A second form of retro-nasal disease is the disorder described by Tornwald as inflammation of the pharyngeal bursa. It consists either of cysts in the substance of the pharyngeal tonsil or of suppurative inflammation limited to an open recess in that structure. But these disorders have not been frequent in my practice, and I have not seen enough of ear complications with them to speak authoritatively. By far the most common condition constituting retro-nasal catarrh is that characterized by a viscid white or gray but not purulent secretion coming from the posterior choanæ and accompanied by no lesion recognizable by the rhinoscope. In such typical cases the pharynx appears healthy and is not reddened. The posterior ends of the turbinated processes show no characteristic anomalies. It is true anomalies are often present, especially hypertrophy of the posterior ends of the inferior or even all the turbinated bodies or flat tumefactions or vascular swellings on the sides of the vomer near its rear end. But since the characteristic symptom, viz., the presence of viscid phlegm behind the nose, does occur in cases where no

such lesions exist, I cannot but regard them as secondary complications. While I do not know of any satisfactory pathological investigation of this disease, I can only interpret the clinical facts as indicating a persistent irritation in the posterior part of the nose probably due to a limited localized inflammation. It is this form of retro-nasal catarrh without characteristic lesions which constitutes the starting point of the so-called dry catarrh of the middle ear.

Bosworth deserves the credit of having proven that retro-nasal catarrh can be maintained by any nasal stenosis and benefited or even cured by the operative removal of the nasal obstruction. While I consider this observation an important advance in nasal therapeutics, I cannot agree with Bosworth's opinion that retro-nasal catarrh is always due to nasal stenosis. I have seen many instances of persistent post-nasal viscid secretion with perfectly free and unobstructed nasal passages. According to my observations post-nasal catarrh is the remnant of an acute diffuse inflammation of the nasal passages. Without denying that nasal stenosis is the most frequent condition which determines such a sequel to an acute catarrh, I must insist that many of the spurs and ridges on the septrum which obstruct the passage in old cases of retro-nasal catarrh are themselves the result—not the original cause—of the persistent retro-nasal irritation, and that in many instances the caliber of the nasal passages was not encroached upon when the disease began. Still even these later obstructions complete a vicious circle and serve to maintain the retro-nasal catarrh. On the other hand nasal stenosis of different degrees may exist a lifetime without leading to chronic retro-nasal catarrh. The etiology of the latter evidently depends also on other as yet undetermined conditions.

In opposition to Bosworth I must also claim that it is not the nasal stenosis as such which leads to the adhesive middle ear disease, but that this complication depends on the retro-nasal catarrh; for I have often seen the proliferating middle ear disease in connection with retro-nasal catarrh, but with

perfectly clear nasal passage, while I have never seen this form of ear trouble in patients who had nasal stenosis without post-nasal catarrh. If patients with obstructed nose, but without chronic post-nasal catarrh, get ear trouble during an acute attack of naso-pharnygeal inflammation, it is usually the secretory form of middle ear catarrh, which yields readily to aural treatment, provided the naso-pharyngeal inflammation does not become chronic.

The prognosis of the adhesive form of middle ear disease coincides with the prognosis of the post-nasal catarrh. If we can benefit the latter, we can arrest the disease of the middle ear. But whether we can improve the patient's hearing depends on the condition of the middle ear at the time. If the disease has existed long, there are probably adhesions which cannot be recovered from, and while the patient may lose the feeling of fullness in the ears and the harrassing noises we may only be able to promise him an arrest of, but not a recovery from his deafness. In recent cases of a duration of only some months the prospect for the hearing is generally, but not always better.

Where the catarrh is maintained by nasal stenosis, the removal of the latter cures the ear, provided it cures the catarrh. But operations for nasal stenosis are not always as successful as writers would have us believe. If a septum shows a sharp crest, it is not difficult to cut it off; but when the septum is simply crowding one side, either by a convex deflection or by a diffuse thickening, it is often not possible to restore nasal patency.

Cauterization of the inferior turbinated bodies is an operation which is even more often performed uselessly than resection of septal prominences. While the removal of really hypertrophied or turgescent cavernous tissue may prove of great service in clearing the narrow passages, the burning of the mucous membrane which, on account of the narrow space, is incapable of swelling, gives often but great annoyance and rarely any permanent benefit to the patient. When-

ever there is appreciable hypertrophy of either the posterior ends of the turbinated bodies or of the lining of the vomer its operative treatment improves the post-nasal catarrh and with it the ear disease.

But I must repeat there are plenty of instances of post-nasal catarrh without obstructive lesions, and the treatment of these cases and the prognosis of their ear trouble are at present very unsatisfactory.

A review of these observations, from the aural point of view, leads to the following conclusions:

1. Acute suppurative inflammation of the middle ear, if not treated, has a tendency to become chronic, the tendency increasing with the age of the patient.

2. Chronic suppuration of the middle ear rarely heals without ear treatment. Neither acute nor chronic purulent otitis are influenced by nasal treatment; but the liability to relapses after their cure is decidedly lessened by the removal of naso-pharyngeal anomalies.

3. Acute catarrh of the middle ear will generally terminate in complete recovery under aural treatment, and sometimes even without it, provided there are no persistent nasal or pharyngeal lesions. But when these are present the disease is more likely to become chronic in spite of aural treatment, and in many instances can either not be cured, or if improved will speedily relapse, unless the normal state of the nose and throat is restored.

4. Proliferating or adhesive disease of the middle ear is the consequence of retro-nasal catarrh, and its course is determined by the course of the disorder causing it. Aural treatment alone is practically useless in this form of trouble, while nasal treatment, if successful as far as the catarrh is concerned, will also arrest the ear disease. The restitution of hearing, however, depends on the length of time the disease has lasted, and is often aided by ear treatment after the cure of the retro-nasal catarrh.

DISCUSSION.

Dr. Boerne Bettman, Chicago:

The conclusions Dr. Gradle has reached are the conclusions of most aurists, who have come to the understanding that it is absolutely impossible to treat diseases of the ear without diseases of the nose and throat.

One point Dr. Gradle did not touch upon, namely, differences of climate. In Chicago, where there is more or less moisture in the atmosphere, cases are not so readily treated as in a dryer climate, for the simple reason the mucous membrane is hygroscopic. If there is any swelling of the middle turbinated bones, in connection with exostosis, these cases are not so readily treated as they would be in a dryer climate.

SQUINT AND ITS TREATMENT.

BY WILLIAM H. WILDER, M.D., CHICAGO.

We understand by squint, or strabismus, that condition of the eyes in which the visual axis of one deviates from the visual axis of the other when in a position of fixation upon an object.

The normal position of the visual axes is parallel when the eyes are fixed upon a point at an infinite distance, and more or less convergent when fixed upon any object nearer than infinity.

Paralysis of any individual or group of the extrinsic muscles of the eye would give rise to a disturbance of this adjustment of the visual axes and cause paralytic strabismus.

In this the movements of the affected eye would be more or loss restricted in those directions controlled by the paralyzed muscle, and there would be a corresponding deviation of the axis of that eye, while in movements in other directions it would follow the sound eye and the axes would be normal.

In the condition known as concomitant strabismus, which it is the purpose of this paper to consider, there is no paralysis ; for the squinting eye follows the other in all its movements. Furthermore, the same angle of deviation from the axis of the sound eye is maintained in any position the eyes may assume, whereas, in paralytic squint, the difference between the two becomes more marked when the eyes are moved in the direction of the paralyzed muscle.

In concomitant strabismus the sound eye takes a faulty position whenever the unhealthy one fixes upon an object. For example, if the healthy eye is covered with a card, and

the squinting eye compelled to fix upon a certain object, as the surgeon's finger held up at a distance of a foot or two from the face, the sound eye will be noticed to deviate from the normal position, and in fact to deviate to the same extent that the unhealthy one does when but both are uncovered. This secondary deviation, as it is called, on the part of the sound eye, is always equal to that of the squinting eye.

We have furnished here one of the most characteristic differential points between concomitant and paralytic strabismus, for in the latter the secondary deviation is much greater than the primary.

Concomitant squint may assume any one of four directions—inward, outward, upward or downward—of which that of inward, the convergent form, is by far the most common, while the next most frequent is the outward, or divergent variety.

In looking for the cause of convergent strabismus several causes have to be considered. In a large majority of cases, as was first shown by Donders, there exists a certain amount of hypermetropia, and on account of this the relation between accommodation and convergence is disturbed. The same nervous impulse that brings about the act of accommodation also excites the act of convergence, in order that there may be binocular vision. In hypermetropic eyes the impulse to the accommodation necessary to focus rays coming from a near object would require to be stronger than if the eyes were emmetropic, while the degree of convergence required would not have to be increased. Hence results a lack of harmony between accommodation and convergence, and for a long time this was adduced as the dominant cause of convergent squint.

Although this may be one of the influential factors in the production of squint, there are some very potent objections to the view that it is the only cause, among which are the facts that all eyes affected with hypermetropia do not squint, and that even in high degrees of it, in which, according to the

theory of Donders, there should be extreme strabismus, there is very often none.

Further, this theory does not explain the convergent strabismus occurring in myopes of emmetropes who make no excessive efforts of accommodation.

Schweigger's theory sets forth that the cause of the convergent form is to be found in the lack of equilibrium between the internal and external recti muscles, and that there is an insufficiency of the externus owing to lack of development or an abnormal thickening and shortening of the opposing muscle.

Hansen Grut considers that the shortening and thickening of the internus is one of the main factors in the production of convergent squint, and that this is brought about by excessive and prolonged innervation of these muscles.

The size and shape of the eyeball and orbit may also play a role in the production of this condition ; if the eyeballs are short and widely separated from each other, and the orbits deep, it can readily be understood how such eyes would have more of a tendency to converge than eyes with long antero-posterior diameters placed in shallow orbits.

In a very great number of these cases—according to Schweigger thirty per cent., to Nagel seventy per cent.—there is defective visual power or amblyopia of the squinting eye, amounting in some cases to almost complete blindness, so that the patient is unable to see even the largest letters. In such cases there is very little change in the ophthalmoscopic appearance of the eye, perhaps a bit more pigment around the disc, or a faint discoloration of it, or a slight stippled condition around the yellow spot, that in other cases would hardly attract attention.

It is quite fair to assume that in many of these cases the amblyopia is congenital, and not the result of want of use resulting from defective refractive conditions of the eye, for in many the error is so slight that it is scarcely conceivable how such a change could be effected thereby. But in other cases

the refractive element seems to be a prominent cause of the emblyopia, as well as of the strabismus, and it is in this class that real improvement in visual acuity may result from wearing glasses that fully correct the ametropia.

The true cause of the amblyopia, in many cases, is possibly to be sought for in a lack of development of the perceptive centers ; so, it is not unlikely that the delicate nerve centers that preside over the innervation of the muscles of accommodation and convergence may be at fault so that an inco-ordinate action of the extrinsic muscles of the eye results.

Defective outward mobility, particularly of the squinting eye, is frequently seen, showing the weakness of the externus ; and examinations in numbers of cases go to prove that defective abductive power is a very prominent factor in the causation of converging strabismus.

The cause of divergent squint is most frequently to be found in myopia. The myope, being compelled to hold objects very near to get the best vision, weakens his interni muscles by excessive use and allows the externus to draw the eye outward.

A squint may be permanent or it may be periodic, in which case it occurs usually when some great effort of accommodation is made.

It may be monocular and it may be alternating, in which case, either eye will be able to fix upon an object, the other squinting in the meantime. In the latter variety it is usual to find that the vision is fairly good in both eyes, while in monocular squint the unsound eye is frequently amblyopic.

Treatment.—The results aimed at in the treatment of squint are : the relief of the unsightly deformity and the restoration of binocular vision, if this has ever existed.

The value of a full correction with suitable lenses of errors of refraction, in children or older patients who show a tendency to squint, has become very widely recognized among specialists.

Children, as young as two years, may be provided with glasses, and by this means many of them will be prevented from acquiring the habit of squinting.

In many cases of the periodic and alternating forms of the affection, it is very probable that the anomalous refractive condition of the eye is largely accountable for the establishment of the squint, and that if this error be corrected by proper glasses, an important exciting factor will be set aside.

Furthermore it seems probable that in a considerable proportion of the cases belonging to the above mentioned classes, a part if not all of the amblyopia is dependent upon the error of refraction, and is the result of imperfect functional development of the retina or of the perceptive centers occasioned by imperfect visual impressions.

Such a view is suggested by the fact I have repeatedly seen demonstrated, that a full correction of hypermetropia and hypermetropic astigmatism in cases in which the vision is considerably impaired, has often the effect of markedly improving the sight.

Such cases go to sustain the theory that the amblyopia is "ex anopsia," and that, because, since birth, the retina has never received distinct images, it has failed to develop its complete function.

Accordingly in all cases showing any tendency to development of squint, glasses that fully correct the hypermetropia and astigmatism should be constantly worn.

We cannot promise that in all cases the result will be satisfactory ; probably it will not be so in those in which congenital amblyopia not due to refractive error exists.

It is in children that the test known as retinoscopy or sciascopy is peculiarly valuable as a means of determining the refractive condition of the eyes. With it the total amount of ametropia, together with the astigmatism, can be estimated more accurately than can be done with the ophthalmoscope and ophthalmometer, although the value of the latter instru-

ment for determining the degree and the meridians of astigmatism is a settled matter.

In conjunction with the treatment with glasses, the child may wear a bandage over the sound eye for several hours a day to compel the weak one to exert itself and to fix upon objects, in the hope that the vision may be thereby improved.

In many of these cases, however, nothing short of operative treatment will avail, but before this is attempted a careful consideration should be given to certain points.

As stated above, the refraction should be examined, and if the patient is old enough to read, a test of the acuity of vision should be made with the test letters and also an examination to determine the presence or absence of diplopia. If the latter exists, it indicates that the sight of the squinting eye is still good, and there may be hope of restoring binocular vision by the use of correcting glasses after the operation.

The angle of deviation should also be carefully measured with the perimeter, and at the same time and in the same way the lateral mobility of the eyes, especially the mobility outward of the squinting eye should be estimated.

It is not considered advisable to operate on children under the age of six years, and even after that age not until glasses have been given a thorough trial. Particularly is this true in cases of alternating squint, in which it is probable that the difficulty is occasioned by a hyperopic condition of the eyes. In quite a number of such cases the squint disappears before the age of puberty is reached, so that if an operation of dividing the tendon of the internal rectus were done early in life, a deviation outward might subsequently develop.

The operation for the relief of convergent strabismus may be either a tenotomy of the internus by which the adductive power is diminished, or an advancement of its opponent, the externus, by which the abductive power is increased; or a combination of both may be practiced.

If the deviation amount to 15 degrees or less and the outward mobility of the squinting eye is good, a tenotomy of the internus will correct the error; while if the squint measure between 15 degrees and 30 degrees, tenotomy of both interni will be needed, or in the event of the externus being too weak, tenotomy of the internus combined with advancement of the externus. Division of the internus will usually effect a correction of 15 degrees, but this may be still further increased by loosening the attachments of the capsule of Tenon. This, however, should be cautiously done, lest the power of the internus be permanently weakened by the muscle slipping too far back.

In very many of these cases, the externus is either abnormally weak, or it has its attachment so far back that it has not the control over the eye that it should have. It is certainly more rational to strengthen the weak muscle than to attempt to correct the deformity by weakening a muscle that, in very many of the cases, is only *relatively* too strong.

I think, too, it is possible to gauge the effect more accurately by this procedure, even in a low degree of squint, than by making a complete tenotomy on one eye with possibly a subsequent one on the other. This applies especially to those cases in which one eye is distinctly amblyopic and in which the deviation is 25 or 30 degrees or more. To do a double tenotomy in such a case would not be as rational treatment as to operate on the affected eye alone with a tenotomy of the internus combined with advancement of the opponent.

De Wecker practices what he calls capsular advancement, which consists in bringing forward the capsule of Tenon at the point of attachment of the tendon of the opposing muscle, without dividing the tendon itself. In slight cases this answers every purpose.

It is better to leave the eye slightly convergent after operating, as the effect of the treatment is likely to increase.

In the divergent strabismus of myopia, caused by the weakening of the interni from excessive use, as was

mentioned, the most scientific treatment is an advancement of the internus rather than a division of the externus, which would still further limit the mobility of the eyeball.

That this unsightly deformity of squint can be safely and satisfactorily removed there can be no question; and it has also been indubitably demonstrated in the experience of many that in a fair proportion of cases the restoration of useful binocular vision is quite possible.

ON THE INFLUENCE OF THE SHIP CANAL, NOW BEING CONSTRUCTED BY THE TRUSTEES OF THE CHICAGO DRAINAGE DISTRICT, ON THE SANITARY CONDITION OF CHICAGO AND THE STATE OF ILLINOIS.

BY N. S. DAVIS, M.D., LL.D., CHICAGO.

The members of this Society are probably all familiar with the fact that the Board of Trustees of the Chicago Drainage District, are engaged in constructing a canal from some point on the South Branch of the Chicago River to the Desplaines River near Joliet, of sufficient capacity to give a flow of from 300,000 to 600,000 cubic feet of water per minute, with a current not to exceed three miles per hour, and a depth of from fourteen to eighteen feet. The estimated cost is to be from $25,000,000 to $50,000,000, to be furnished by taxing the property of the District.

It is designed to promote both commercial and sanitary purposes, by opening a free ship canal from Lake Michigan to the Illinois River and a free outlet for the sewage of this city. With the commercial aspects of this extraordinary undertaking I shall have nothing to do in this paper, but shall invite your attention solely to the very important sanitary interests involved. It may be stated as a general maxim that the sanitary condition of any city or densely populated district, depends upon the thoroughness of the soil drainage, the proper disposal of the sewage, the purity and abundance of the water supply, and the character and habits of the inhabitants.

That the first and second conditions just named are very imperfectly accomplished in this city, all will admit who take the trouble to investigate. And it was the confident expectation that the construction of the proposed ship canal would not only remedy these important defects, but also effectually prevent any pollution of the water supply, that induced three-fourths of the people to cast their votes for the Drainage District. But will the completion of the canal, as proposed, fulfill this expectation?—Will it increase, in any material degree, the efficiency of the soil drainage over the nearly two hundred square miles included in the territorial limits of this city? It is strenuously claimed, both by the Drainage Board and its supporters, that the completion of the canal will not in any degree lower the level of the water in the river or the lake. Neither is it proposed to alter either the direction or the level of the sewers. How, then, can the canal influence the soil drainage? Can it possibly make any difference whether the current in the river moves towards Lake Michigan or towards Joliet, provided it moves at the same level? Certainly not. And yet it is this inefficiency of drainage, coupled with the unsanitary habits of large classes of the people, that constitute the chief factors in determining the ratio of sickness and mortality, as an examination of the details of our vital statistics will show. It must be remembered that the territory occupied by this city was naturally but a few feet above the level of the water in the river and lake, and rested upon a thick bed or stratum of blue clay practically impervious to water, with but a thin covering of prairie soil, except parallel with the lake shore, and near to it, where the clay is covered by several feet of sand drifted in from the lake.

Consequently this loose sand ridge, if we may so term it, is the part admitting of the most complete soil drainage by sewers; is well paved, and chiefly occupied by good residences or business houses, and containing well-to-do people. The 1st, 2nd, 3d, 4th, 21st, 22nd, 24th, 25th, and 32nd

Wards substantially occupying this territory fronting the lake and extending from Lake View to Hyde Park, with a population, as stated by the recorder of vital statistics for 1892, of 312,519, and a total mortality of about 11.4 per 1,000. The territory extending directly west of the wards just named and lying on both sides of the north and south branches of the river, was naturally the lowest part now occupied by the city; much of it so low that efficient sewers could not be run through it without raising the grade and filling the streets. Accordingly the streets have been raised, sewered, and mostly paved, giving them a fair surface appearance, while under the houses and all the rear part of the lots, the surface remains at its original level, from one to six feet below the surface of the streets. Of course every copious rain-fall floods the low part of these lots, the water finding its way into the sewers only slowly and much of it disappearing by the slower process of evaporation. On the rear of a large proportion of these lots may still be found the cow shed, the horse stable and the cesspool or privy for the family, with their attendant refuse to be mascerated and the products soaked into the soil. The 5th, 6th, 7th, 8th, 9th, 10th, 15th, 16th, 17th, 18th, 19th, 20th, 23d and 27th Wards occupy the territory I have just described, with a population of 572,487 and a total mortality of about 18.1 per 1,000 in 1892, that is, more than 34 per cent. above the ratio for the first series of wards given. If, in addition to a comparison of the gross mortality of the population of the two series of wards, we compare the mortality from particular diseases, we shall find the disparity still greater.

Thus the ratio of mortality from *typhoid fever* in 1892 for the first series of wards was about 4.4 per 10,000 inhabitants, and the second series of wards 8.1 or nearly double that of the first. The difference in the ratio of deaths from acute diseases of the respiratory organs is equally great, and that from diarrhœal diseases still greater. Now what are the

causes that make so great a difference in the ratio of sickness and mortality between the two series of wards I have named? If the often repeated assertions of the public press, corroborated by the opinions of not a few of our sanitarians, could be considered reliable, we would be obliged to consider the use of water from Lake Michigan contaminated by the outflow of sewage through the Chicago River, as the chief cause of all our excess of sickness and mortality. And through such channels the people have been diligently instructed to believe that if the current of the river could be turned wholly southward through the great canal, leaving their drinking water from the lake pure, typhoid fever and most of the other preventable diseases would cease to prevail among us.

But the stubborn fact, fatal to all this popular anticipation, is, that the population of both series of wards I have named are supplied with all their water from the same lake, through the same tunnels and pipes, and on the same conditions. Consequently the marked difference in their mortality cannot depend on their water supply for drinking or culinary purposes. On the contrary three prominent factors combine to make the mortality of the second series of wards from 34 to 40 per cent. higher than that of the first series: 1st. The very defective soil drainage I have already described. 2nd. The less attention to the prompt removal of refuse and decomposable materials from the alleys and rear of lots. And 3d. The generally smaller houses, more crowded and less ventilated rooms, and less cleanliness generally. It must be apparent to any well informed and thoughtful member of society, that merely changing the direction of the current of water in the river will not exert any influence on either of these three factors or etiological conditions so long as the level of the water in relation to the sewers remains the same.

That the sanitary condition and ratio of mortality of this city during the last few years has not been influenced in any marked degree by the water supply from the lake, is further shown by the fact that the prevalence of typhoid fever and

diarrhœal affections prevail least during those months when there is the greatest outflow of sewage from high water in the river. For instance, during the months of March, April and May, 1892, when the whole surrounding country was suffering from floods, and when during one week of May the current in the river was estimated to carry into the lake more than 300,000 cubic feet of water per minute until both microscopists and chemists claimed to find evidence of sewage contamination in the vicinity of the four-mile crib, the number of deaths recorded from typhoid fever was only 202. But after the flood had disappeared, the current in the river reversed, and the lake water pronounced free from sewage contamination, the months of July, August and September furnished for the recorder of vital statistics 528 deaths from typhoid fever. Whatever typhoid bacilli the people had drank during the sewage outflow lakeward in April and May, should have developed their fatal results during those and the succeeding month. Instead of this, however, the period of fatality does not come until two, three and four months after, when the surface water had disappeared and the emanations from the soil and refuse of the lower and less cleanly lots were most active and virulent. Plainly, then, it was not the water pumped through the hydrants from the lake for the people to drink, but the water that saturated the imperfectly drained soil and refuse of their lots, aided by less ventilation and cleanliness, that increased this mortality.

From a long familiarity with the sanitary conditions influencing the people of this city, and an equal familiarity with their vital statistics, I am convinced that if the proposed drainage or ship canal was completed as required by the law creating the Chicago Drainage District, it would not result in the lowering of the ratio of mortality one per cent. If the taxpayers of Chicago are willing to pay $50,000,000 for enabling lake vessels to go through to the vicinity of Joliet instead of stopping at their own docks, let them do so, but do not longer propagate the delusion that they are to receive any

material sanitary benefit therefrom. Do not infer from the foregoing remarks that I regard a free and permanent flow of sewage through the river into the lake, from which we receive our water supply, as harmless or desirable. On the contrary I think it would often contaminate the water to a dangerous degree even beyond the four mile intake or crib. If it is true, however, that so great a body of naturally pure water, freely moved by the winds and holding a large per cent. of free oxygen could become so impregnated with our sewage as to become positively unwholesome for domestic use, what effect would it have upon the much less volume and less pure water of the Desplaines and Illinois Rivers?

Mr. L. E. Cooley, one of the Drainage District Trustees and a leading advocate of the ship canal, has said that "Many analyses of the streams of the Illinois basin at all stages show them to be highly charged (with organic matter), and their waters readily stagnate under proper conditions." And yet he proposes to add to those streams a volume of from 300,000 to 600,000 cubic feet per minute, of water from Lake Michigan, holding in solution or suspension the unpurified sewage of a city of between 1,000,000 and 2,000,000 of inhabitants; and by so doing to render them more wholesome and more prolific in the growth of fish for food. This is founded on the theory that decomposable organic matter is so rapidly oxidized or nitrified by dilution in running water that it is rendered harmless. It was on this theory carefully elaborated by the sanitary engineers of London, that the authorities of that city, nearly half a century since, completed an extensive and costly system of sewers emptying directly into the Thames. But a very few years demonstrated the fallacy of their theories, and compelled the expenditure of as many additional millions of dollars in constructing intercepting sewers and reservoirs to prevent the river from remaining a permanent nuisance. Paris followed the example of London and turned her sewage into the Seine, with the same result. And I have not been able to find a single example of a natu-

ral stream, large or small, into which had been turned a constant flow of any considerable amount of unpurified sewage, that it did not in a few years become contaminated and unsanitary. The Desplaines and Illinois, like all other rivers, have their curves and eddies, their deep places and shallow ones, and their seasons of low and high water. During the floods of high water the deposits that had been accumulating in the more stagnant places are swept out and carried with the outflow over the low lands and into the lagoons and connecting water courses, and on the subsidence of the high water are left to propagate the products of decomposition during the succeeding summer and autumn, with a corresponding increase in the prevalence of sickness and mortality. So uniform have been these results in both Europe and America, that outside of Illinois I know of no sanitarian of reputation that now sanctions the turning of large quantities of unpurified sewage into natural water-courses, or even the utilizing of a ship canal as a highway of commerce and at the same time as an open main outlet sewer of a great city.

It is an acknowledged sanitary axiom that the benefits of dilution by water are increased in proportion as it is applied quickly and at or near the sources of the polluting material. Consequently if the purifying influence of a running stream of water from Lake Michigan is as reliable as is claimed by the advocates of the ship canal, it would be much less expensive and far more efficient to increase the tunnels under the lake and the water supply sufficient to keep a stream of hydrant water constantly flowing through every wastepipe connecting with the sewers. This would not only dilute the sewage material at its source, but would also maintain a constant and more efficient current through the sewers and river with its branches. But as neither this nor the ship canal would alter the level of the river in its relation to the sewers, neither would alter perceptibly either the defective soil drainage, the crowded and poorly ventilated houses, or the unsanitary habits of large classes of the people, that I

have pointed out as the real sources of the excess of sickness and mortality in our city. I know of but two methods by which the soil drainage could be rendered more complete, and at the same time remove the sewage without polluting the waters of either lake or rivers. One is the method already several years in successful operation at Pullman, which might be economically and successfully applied to several other of the outlying districts of our city territory. The other is the deep tunnel plan of Engineer Knott, by which the outflow of the sewers and consequently the soil drainage would be rendered much more efficient, and by terminating in reservoirs for precipitation and purification, would effectually prevent the pollution of water courses and greatly improve the sanitary condition of our city. And when, twenty years hence, after our citizens have been taxed to the extent of $50,000,000 for constructing a ship canal which would simply extend the lake commerce to Joliet with some additional dockage and water power, but with no sanitary advantage to either city or state, they will be compelled to spend $20,000,000 or $30,000,000 more in rendering the two methods just named, available for needed sanitary improvement.

DISCUSSION.

Dr. Ephraim Ingalls, Chicago:

As the life, the happiness, the usefulness and wealth of any people are largely dependent on their healthy surroundings, and as Chicago is likely to become the largest center of population in the western hemisphere, it is obvious that its sanitary drainage is a question of cardinal importance. Diseases originate largely from seeds that germinate in the animal system or from debris incidental to its healthy action. We then should find some means of being rid of these seeds and this debris. I do not think it is yet settled how Chicago will ultimately do this work. Time and experience may lead us to adopt methods different from such as we are now using. We may come to think it unwise to deprive our lands of these fertilizers. But for the present, the plan of removing our

sewage in solution through the agency of water is the most speedy and only practicable one. Whatever means we use, no sewage should enter Lake Michigan at Chicago, and none ultimately will. We shall have faultless water, and none is more wholesome and desirable than that which fills the chain of lakes reaching from Superior to the St. Lawrence. These great inland oceans have many miles of shore line that are everywhere in salubrious climates; they receive comparatively few affluents and have but a single outlet. This allows their waters a very long period for the precipitation of mineral, and the oxidation of animal substances, which gives them ideal potable qualities. The plan we propose and are now executing for diverting our sewage from Lake Michigan is as follows: All our sewers are to empty into the Chicago River. The current of this stream is to be changed so as to flow from its present mouth to its present source. This is to be accomplished by the construction of an artificial channel that shall draw the waters of Lake Michigan in large volume through the Chicago River and empty them into the Desplaines, through which by way of the Illinois and Mississippi Rivers they will find their way to the Gulf of Mexico. This channel is already in process of construction, and for its completion, which we hope will occur in about three years, Chicago has provided a fund of between twenty and thirty millions of dollars. It is objected by some that this undertaking will cost us too much money. As this work is an imperative necessity its cost need not be too closely considered. We have a superabundance of labor that will count it a favor to be called to do the work, and an adequate reserve of capital to pay for the labor, and both will be benefited by the transaction. Neither the capital nor labor could be applied to a better purpose. The enterprise, too, has a business aspect that should not be overlooked. When the channel is completed in accordance with present plans, it will enable the boats that navigate the Mississippi River and its tributaries to reach Chicago, and thus give to the Father of Waters a second commercial mouth.

DR. J. J. M. ANGEAR:

There is one thing in the paper that I think might be enlarged upon, and that is in reference to the high water in the river carrying this material into the lower lands and depositing it there and then the next high water carrying it away somewhere, as if that was going to be a source of contamination. I think that is a mistake, when this material has been oxidized or a chemical change has taken place, it is precipitated, and when it is in that form I think there is no further danger of contaminating disease through it. By way of emphasis I want to call attention to the fact that

whenever they are cleaning out even our catch basins the material which is taken out is almost odorless and it could be carried out and put over the ground without any fear whatever, so I think there should be no objection raised to the fact of this disposition being made in the lower lands and then carried off to other places, because I do not believe there is the least danger from it. Another point Dr. Davis made was that it would be better for us to increase the pumping appliances and allow water to run freely into the sewers and thus dilute the sewage. I have entertained that idea for a long time, and have thought it would be a good thing if the authorities would allow, rather than condemn as they do, the poor people who are not able to buy ice, to keep the water running on their butter and milk to keep it cool. I think they would be doing a great deal of good to the city by allowing that amount of water to run into the sewers; it does not require an independent system. Then again, in reference to the sewer, or canal drainage system not being lower than it is and not affecting the surface; I think that is a mistake. The water, if it runs in this canal faster, a larger amount of it, will make a great change in the surface soil; it may not be carried off in a great stream so that we can see it, but there will be an imperceptible drainage into that rapid stream. I think we have a fundamental law here, that there is a suction produced by a rapid current. It is the same principle upon which our automizers are made. Here is a rapid stream coming in contact with the water, and it actually sucks it out of the lower part of the bottle; and the rapid stream on the surface of nature will do something of that kind. So I think our drainage system is going to be a benefit, even in those ways that have been suggested might be objectionable, or some other system might be better. Another thing that has been referred to is the contamination of the atmosphere, that when the Chicago River is stagnant we have a peculiar odor that we sometimes call "Bridgeport," and smell so intensely on some hot summer evenings. Now if this drainage system does nothing more than to increase the amount of flow and carry the material away, we will not have that odor; so I do not think it is exactly right to condemn it by saying that by and by we shall be obliged to spend so much more money. "Wise men change their minds, but fools, never," and I trust that we shall make such progress in science that we shall have to spend more money; perhaps it will be after the majority of us are gone, but nevertheless the city will be here, for Chicago has come to stay.

Dr. O. B. Will, Peoria:

I should like to say a word or two on a different phase of this subject. As a resident of the city of Peoria, one of the river

towns past which it is proposed to carry this drainage, I have some interest in this matter. It was discussed in Peoria *pro* and *con*. As long as we secured our water supply from the Illinois River, very strenuous objections were urged to the deposit of the sewage from Chicago in that river. But since our water supply has been secured from the springs in the bluff, we care nothing for the river as a supply; therefore little or nothing is now said in the city of Peoria about Chicago sewage. Previously public meetings were held and great interest was taken in the matter. Now we take comparatively little interest except in its commercial aspects. However, this fact is at the present time apparent to us, that by the time the sewage from the city of Chicago and the towns further up the river (it is, I believe, 120 miles in a direct line; I do not know the distance by the river course) reaches us, we can detect very little of even the odor, except in the winter season, when the river is frozen over; then at the air holes, or the points where the sewage from our own city enters the river, you can scarcely endure the odor; to go within two hundred feet of it is almost unbearable. I presume that is due to the fact of the Chicago sewage coming down there under the ice without sufficient ventilation. During the summer season we detect very little of this odor, and I apprehend there is comparatively little deleterious matter in the water.

Something has been said with reference to Peoria whisky. A great objection was made in towns lower down the river to the disposition of the slops from the distilleries, and refuse from the cattle sheds. It was claimed to be destroying the fish in the river, which were dying in large numbers all the way down the river. They went so far this last winter as to send a committee from the legislature to investigate the matter; that was when the stream was frozen over, and they found that the drainage from the distilleries was not reaching the river at all, it was running on top of the ice. So it was concluded by the committee that the death of the fish was not due to the disposition of the slops from the distilleries, but to the sewage from Chicago and other towns further up the river, which had accumulated and was held under the ice and could not be oxidized, as it is during the summer season. As I say, we do not at present in Peoria take a very great interest in the matter, because when it reaches us it is almost inodorous and the present very meagre pollution is seemingly harmless.

Dr. E. P. Cook, Mendota:

The subject under consideration is of great importance to the city of Chicago. I have listened with much interest to a part of Dr. Davis' paper and have been instructed by the discussion thus far. I can see in the plan suggested by the paper relief to very

many of the smaller communities in our State, and I will speak only in reference to their needs. Perhaps the method suggested will be the one we will have to adopt in the future in many of the smaller communities, particularly those on the flat prairies where the fall is very slight. I can speak of our community of four or five thousand inhabitants, where we are facing that question to-day, and I believe the solution will come in the method suggested in that paper, tunneling, forcing this waste material that we are trying to get rid of to a point sufficiently distant, into reservoirs for its reception and precipitation, and its distribution over the lands as a fertilizer, or possibly its incineration. The time is not distant when the agriculturists of our State will appreciate the value of this waste material. To-day in a community like ours there is great opposition among the farmers of our vicinity to allowing even that which is washed along the surface, to reach their lands or their fish ponds. Without very great expense in these smaller towns a system of sewerage can be adopted; we can find the water to flush these sewers and carry their contents to the reservoirs for precipitation, removal and distribution over the lands as fertilizers. In this method may be the solution of a difficult problem, unless entire communities may do as each home may do, all the waste material in any home can be safely disposed of without great difficulty or great expense, and if in one home, then in 10 or 100 or 1,000 or 10,000; cremation on a small or large scale as required.

I think this subject is perhaps as important a one as we could consider to-day in the opening of this section of the State Society, and relatively of as great value to the sanitary interests of the smaller communities of the State as it is to your great city of Chicago.

Dr. Wilcox:

Chicago is only a half century old and there are many lessons she can learn from some of the older cities. Two years ago I examined the sewerage systems of London and Berlin. In former times, the sewers of London were at right angles to the river and emptied the sewage into the Thames; the tide carried it out thirty or forty miles, polluting the water and killing the fish. Now on either side of the Thames there are three immense intercepting sewers, and the sewage is carried below five or six miles, where they have a flume into which various chemicals are thrown; it is then carried to the sea and dumped. Some engineers have recommended a change which would cost twenty millions of dollars, to carry this sewage down to the lowlands outside of London and use it as a fertilizer.

In March, 1892, I visited Berlin and saw their system of dis-

posing of the sewage. They have ten receiving vaults, one of which I visited, that collects the sewage of 350,000 people. It was near the heart of the city, a large basin 150 feet in diameter, and stretched across this basin was a big fence, in which a man broke up the coarse refuse. This was carried for about six miles and was raised by standpipes very much as the water in this city is raised. It was let out through water cocks something like our fire plugs, and small farms were conducted in which vegetables of all descriptions were nourished by this sewage. Underlying the soil was ordinary drain tiling in which the sewage was carried off to little ditches, and it was as clear as lake water. This farm was in the heart of the city of Berlin, and, although I visited it in March, there was no unpleasant odor. In early times the people raised a storm at this farm being located in their midst, but now farmers are paying seven dollars per half acre for the yearly privilege of having this sewage to fertilize their land. I asked as to the disposal of garbage, but they did not know what I meant; they simply sell it. The farmers buy the garbage, while we are struggling to destroy it.

In this connection I might speak of the disposal of the garbage in the city of London. Every household has a pail in which they collect the garbage on their lot, and when the collector comes along he rings a bell and they must carry it out. I think as we look over the history of these older cities we can gather some lessons; take the deep sewerage system suggested by Dr. Davis, carry it through the city and there pump it out and use it for fertilizing. That would solve the sewage problem. Its disposal in the river is the worst plan that could be formed; the fish are entitled to inhabit our streams, and by the disposal of the sewage there we destroy the fish and carry whatever epidemic may be prevailing, increasing typhoid fever and other dangerous diseases. Whereas the more civilized plan would be in deeper sewage emptied at pumping stations and used for fertilizing.

Dr. J. H. Tyler, Clinton:

Mr. President, it occurs to me that a paper of so much importance, containing so many facts, ought to be in pamphlet form, in addition to appearing in the Transactions of the Society, so as to secure a more general diffusion throughout the State of the information which it contains.

I therefore move that it be declared the sense of this Section that the paper of Dr. Davis be printed in pamphlet form in addition to appearing in the regular Transactions of the Society.

Motion carried.

Dr. William E. Clarke, Chicago:

That is an exceedingly important idea of Dr. Davis, having a drain so deep as to take off the surface drainage; the figures he gives are so conclusive that the water on the surface percolating and saturating the soil about the dwellings in many parts of the city is more a source of disease than the water we get from the lake. Still, I believe with Dr. Hollister, that something should be done quickly, but ultimately it will have to be deeper sewerage. Another method of getting rid of this is by precipitation in reservoirs. That might become a source of wealth to the greatly impoverished agricultural portion of our country. This land will eventually have to depend upon fertilizers, and precipitation from drainage might perhaps become a vast source of wealth to these people.

Dr. J. H. Hollister:

It is well known to every scientist and sanitarian that we have to deal here with one of the most difficult and intricate problems, in the matter of disposition of the sewage, of any city in the world; first, because of its position, its grades not permitting the drainage that might be desired; second, the rapidly increasing population and the necessary pollution of the premises thus occupied. While it is of the utmost importance that every means available should be employed for the proper cleansing of the surface, for the prompt removal of all decaying organic matter, and for the best possible means of drainage of premises that are occupied, still the question is open for consideration, as to the effect of the largely increased inflow to the land from the lake, which is contemplated by this change, in connection with what may be done on the land, as one of the available means for mitigating our present peril. We shall in future, of course, have in this city a rapidly increasing center of pollution unless every available means shall be made use of for the disposition of its sewage. If large dilution can be accomplished with fresh water which, even upon the same level, is moving inland with an increased velocity, we will, according to Dr. Davis' own theory, go quite far toward the removal of offending matter from our city. I cannot see why, with the enlargement of this canal and the largely increased volume of water flowing, as is provided for, with the pure lake supplying us, we cannot carry into this general current an amount of water which shall be essential to its dilution; and just so far as this shall accomplish it, I am confident that it will help to mitigate this evil. I believe that the anticipated increase, not only in the volume, but in its velocity also, of the flow down the Illinois River, can accom-

plish not only sufficiently dilution, but sufficiently rapid oxidation of organic material to purify the stream in its onward flow.

There are two great points to be gained: First, although we cannot change the grade of the city, we may increase the supply of fresh water for dilution, and we can certainly increase the velocity of its discharge. I submit whether a general diffusion of this material largely diluted will not be less perilous to the community at large, to the city and to the state, than it would be to have that same accumulation year after year concentrated here and producing its necessarily fatal results. I therefore feel that one of the great reasons for opening the canal now is to dispose as far as possible of this accumulation. The city and the state are alike involved in this great question of sanitation, and I think far less of the evil will be found to prevail with the dilution that is proposed, than from the conditions which now obtain.

THE LUNACY LAW OF ILLINOIS.

BY ANNE HAZEN McFARLAND, M.D., JACKSONVILLE, ILL.

That the demand for a revision in our State lunacy law is urgent, has been proven by the number of able articles recently written upon the subject.

The annual reports made by the Secretary of our State Board of Charities have for years called attention of the general assembly to the necessity for certain modifications of the statutes relating to insanity. As a general thing whatever public interest has hitherto been felt in the subject was excited by those who believe that sane persons are confined in institutions for the insane. It is a difficult subject with which to deal, owing to a constantly wavering public sentiment, which on one day clamors for the confinement and even punishment of insane persons, and on the next day demands the release of these same people in opposition to the opinions and protests of those who are best qualified by training and experience to determine such questions.

*The prevalence of this erroneous notion is largely due to the unfortunate agitation which is maintained in certain quarters and by certain individuals, some of whom are themselves mentally unbalanced, and others, who though doubtless well-meaning and conscientious, are easily misled. This effort to keep alive and foster the popular delusion that sane people are incarcerated and detained in hospitals for the insane from wrongful intent is a source of great wrong to the insane themselves as well as to their relatives and friends whose feelings are often painfully lacerated by the unjust allegations

* Annual Report of N. Y. Commission in Lunacy.

of wrong on their part and the undue publicity given to these domestic afflictions.

This matter, so directly involving the question of personal liberty, has for years engaged the attention of members of this society, and I do not see that we are any nearer its solution to-day than we were twelve years ago, when it was first agitated. Is it the fault of the lawyers or the physicians of Illinois that their state bears the distinction of retaining the weakest and most absurd lunacy law in the union?

Our present statute, with which you are all familiar, is a descendant of the first one—made in 1823—providing that, "Whenever a lunatic or distracted person has an estate, a relative, creditor or other person might apply to the Circuit Court, and it should order a jury to be summoned; and if in their judgment such person was a lunatic or distracted, then the judge should appoint a conservator. The conservator should make return to the Circuit Court. It was further enacted that the overseers of the poor should have charge of the body of such lunatic, and should have power to confine and comfortably support such person," etc. The statutes drawn up in '31 and '45 were substantially the same, but the law of '67 was more definite in matters of detail. This served us until '74, when the present defective law went into operation, pronouncing insanity a crime and banishing from society every one so afflicted. *"The person is arrested, accused of insanity, placed upon trial and convicted the same as he would be for grand larceny. It is difficult to see what necessity the legislature saw for such a law, but their imaginations must have been stimulated by the accounts of incarcerations of sane people in lunatic asylums, a field that has long been popular with writers of sensational fiction, as well as for the modern newspaper reporter who without difficulty gets himself tried and convicted of insanity and committed to an asylum, where the necessity of furnishing 'good copy' for his paper is at once apparent." Dr. H. N. Moyer, in closing his

* H. N. MOYER'S Lunacy Laws of Illinois.

very valuable paper on this subject, says, "From every point of view, from the standpoint of the lawyer as well as that of the physician, it is a bad law, and very objectionable both in theory and in practice. We are amazed that the legislature should so persistently, and, as it seems to us, without reason or humanity, shut its eyes to the defects in it and refuse to correct them, in spite of every effort made to secure attention to them."

I believe the medical profession in this state can secure the passage of any reasonable law by pursuing it as other classes of citizens pursue measures they seek to have incorporated in the laws of the state. The average legislator is a sensible man, but needs to have the necessity of modifications in this law pointed out to him. If, therefore, the physicians would take a more active interest in this matter and open the eyes of their representatives to the failure of one of their state laws, something might be done.

Dr. J. G. Kiernan admits that the whole thing has reduced itself to the victory of one woman over many men, when he says, "There is a female paranoic in Springfield armed with a recommendation from every newspaper proprietor in this city, who will work against a modification of this law. One argument of that paranoic would be stronger than those of a dozen physicians." That the men of both professions have permitted this outgrowth of the brain action of a woman so long to exist cannot be explained.

It is the common experience of medical men in charge of institutions that a very large proportion of cases applying for admission have been retained at home during the earlier months of the attack, often until it is no longer safe for themselves or others, often without adequate medical treatment, and thus the comparatively brief period during which hospital care might be available to restoration having been wasted in unavailing efforts to avoid the publicity of a jury trial. It is of vital importance that the earlier period of an acute mental disorder should be passed in the hospital, where

every appliance of medical skill can be promptly brought to bear upon the case.

* "An inspection and examination of the admissions to a certain hospital for a year discloses the fact that a number of cases have drifted into an incurable condition whose medical history shows conclusively that timely treatment might have averted such an unfortunate result. The State has an indirect interest in the restoration of these persons to health, for if they do not recover, each will cost, if a public charge, so much per capita during the period of lunacy."

This desire to screen an affliction which in many ways impairs future prospects and expectations, and the hesitation of relatives to resort to measures for the legal commitment of their friends is pardonable. A volume might be written from wide professional experience, showing the failure of our lunacy law. Among the letters in my possession bearing upon this subject I copy the following:

"I am painfully aware of the faulty nature of our State law, and could add such testimony as most physicians do to the hardships of the jury trial. I have had a case within the last month, when I had to take a young girl (hysterical mania) to Lewistown, eighteen miles, for trial. I simply drugged her, and protected her in that way. I could also testify to some personalities concerning the originator of the law, but can not easily say more than that the law was framed by an incompetent person."

The spectacle of a patient, suffering from acute mania, being dragged to the court room through public places, and gazed at by the unsympathetic public, is a daily occurrence, and every physician present has participated in such scenes, and still there are some who insist that the present law serves as a protection to humanity.

A newspaper report of a mother's failure to secure a verdict of insanity in the case of her son recently attracted my

* DR. CHAPIN'S Report of Pennsylvania Insane Hospital.

attention: "After a disagreement last week, it took a jury just fifteen minutes to decide that Mr. G. was sane. One of Mr. G.'s witnesses said that he had known him for eighteen months and had never seen a suspicion of insanity. His mother though was sure of his insanity, and recited several instances showing a highly developed power for exaggerating things. He tried to appoint himself chief signal officer, with the rank of lieutenant colonel, and paraded around in his uniform for a while. Dr. Clevenger, foreman of the jury, was convinced that Mr. G. was hopelessly insane, and two jurors agreed with him. The others, however, were sure that they had detected a scheme on the part of some one to get rid of G." The patient's talk about gigantic deals which he thought he was carrying on with large companies, and of large military companies he had organized, were striking symptoms of gradual general paralysis, the diagnosis of which belongs to the physician and not the layman. Not even to the ordinary physician should this delicate examination be entrusted, but one qualified to make a diagnosis of mental disease, based on pathology and experience, and by scientific observation, the only rational method of determining sanity from insanity is made. The want of such methodical observation has no doubt caused many innocent to suffer and many guilty to escape.

Does medicine stand ready to do her part towards furthering the ends of justice so dependent upon law? The ends of justice, the Medico-Legal Society of Chicago declares, can be secured by the appointment of a commission of medical men, whose report shall be accepted as final.

Should this bill pass the legislature, doing away with the obligatory jury trial, it will devolve upon every practitioner in the State to acquaint himself with the different forms of mental disease, in order to sustain this position.

The Third Annual Report of the Commission in Lunacy in New York shows the existence there of the most perfect lunacy law now in operation. They declare that not one case

of wrongful commitment or detention has ever come to its knowledge. Certainly a report of this character is entitled to weight.

In the framing of statutes the ever-guiding principle should be the greatest good to the greatest number. It must not be forgotten that a large majority of the insane are women; that each insane person is a sick person, and therefore illy adapted to withstand the annoyances and disturbances of a public trial, or publicity of any character. The allegation, so frequently made, that in order to secure a commitment to an insane asylum in New York, all that is necessary is to obtain the certificate of two physicians, is not true. It is in each and all instances entirely a judicial matter, and no person can be deprived of his liberty without the approval of a judge of a court of record. It is true that in each case a certificate of two physicians is prerequisite, and it must be the act of physicians who have shown proper qualifications, as required by the statute; who were graduates of an incorporated medical college; who have been graduated at least three years, and who have been declared by a judge qualified to make examinations in lunacy. But the judge is not bound in any way. He may summon any number of physicians. He may take the testimony at chambers or in open court, or he may summon a jury if he so determine. The commission is unwilling to believe that either the judiciary or the medical profession act improperly in these matters. To assert that they do is to attack both the medical profession and the entire judiciary system of the State.

I would endeavor to summarize the thoughts presented in my paper in the following conclusions:

I. The provisions relating to the commitment of patients to the hospitals for the insane seem to be based upon the theory that insanity is a crime rather than a disease.

(Framed by the members of Illinois State Board of Charities).

II. Strict forms of legal commitment are followed by

reduced admissions, a diminution of recent cases, and a disproportionate increase of the chronic class—and an increasing tendency to look upon hospitals for the insane as places of illegal detention.

III. Every State should have a law empowering judges to send patients to insane asylums for observation in case of doubt of their sanity.

IV. Voluntary or self-commitment of the insane should be provided for in the commitment laws.

V. Physicians should be prepared to give a scientific and truthful testimony in cases of insanity.

VI. The lunacy law of the State of New York should be the one adopted by the Illinois legislature.

DISCUSSION.

Dr. D. R. Brower:

I understand that this law is meeting with no opposition at Springfield at this time, and if the members who are present at this meeting will use what influence they have at Springfield, this law will be enacted. The paranoic woman who heretofore has blocked legislation does not seem to be on the ground this season. The bill before the legislature was approved by this society at a previous meeting; it is now very much like the New York State law.

Dr. C. W. Earle:

I move that the discussion of the subject of the lunacy laws of Illinois be referred to the general session, which is to take place this evening.

I would like to say in support of this motion that I have in my possession a letter from Mr. C. A. Partridge, a former member of the house, and who is very active in trying to assist us in obtaining a good law. He is in Springfield now as secretary of the rights of the minority, and is not only thoroughly in sympathy with the bill, but will give us all the assistance in his power. He wrote me a few days ago stating the position of things at present, and advises personal work among the members of the legislature.

There is one question in my mind in regard to this subject, that I think we should consider very carefully. Will not the ordinary legislator do more if we let him alone, than he will if we try to give

him some general information? The idea was prevalent among some of the bright and shining lights who made our laws for us two or three years ago, that every now and then somebody would put some friend, or his wife, quietly in an insane asylum, if they allowed the bill to become a law, and it is quite possible that is why some of them objected. The bill is well advanced at the present time, and without very much help from our profession—and whatever is done must be carefully considered so as not to antagonize our law-makers. Mr. Partridge has done excellent work, and will continue to watch the bill.

Dr. D. R. Brower:

I think Dr. Earle is mistaken; while there has been no lobbying of doctors at Springfield, there has been an immense amount of work done by the profession this session. I have interviewed a number of these legislators here and have written some letters in regard to it, and what I have done is but little in comparison to what has been done by others. Matters are going on smoothly this year because our paranoic friend has not been around. She did not come here to Chicago and get the newspapers all inflamed about the matter, then go down to Springfield and get the legislators all wrong. We have had plain sailing so far because she is absent. It is wonderful that just one woman should be able to defeat all the doctors.

Dr. Griffith:

What we want is to see that the bill does not die in the committee.

Dr. E. Fletcher Ingals:

It seems to me this can properly be brought before the general session, and seems desirable that it should be; for I am very confident, from what I know of the action taken at Springfield, that unless something is done to move this bill along, it will be lost again, but it will only take a little bit now to carry it through. I understand there is very little opposition to it.

The motion of Dr. Earle was carried.

A CONSIDERATION OF THE TRAUMATIC NEUROSES.

BY HAROLD N. MOYER, M.D., CHICAGO.

There is perhaps no more obscure chapter in pathology than that relating to the traumatic neuroses, nor one that has been more burdened with an unfortunate terminology. The difficulties in approaching this subject are by no means lessened by the medico-legal relations which many of these cases present, and which are prone to overshadow the purely medical questions involved.

Notwithstanding the polemicizing of more or less able writers, there stands out the significant fact that many organic and functional disturbances of the nervous system have their origin in traumatisms that are many times relatively insignificant, and that often produce no solution of continuity of the surface, or appreciable alteration of the deeper lying tissues. This proposition will, we think, be generally admitted by almost all members of the profession. As to the exact nature of some of the changes produced by traumatism, their course and termination, there is a wide difference of opinion.

In discussing this subject it is customary to begin with the contributions of Erichsen, who described peculiar, and as he thought, distinctive symptoms that often followed railway accidents and were not associated with demonstrable lesions. To these symptomatic groups he gave the term spinal concussion, in accordance with his view that they were due to a transmission of external violence to the spinal cord. The views of Erichsen met with prompt opposition ; *notably*, Page entering a strong protest against his deductions. A careful review of the controversial literature on this subject shows a

practical unanimity on one point, namely, that traumatisms are competent to produce marked disturbance of the functions of the nervous system where there is no appreciable external lesion. The opinion that this was due to a transmitted vibratory jar impinging upon the spinal cord, was received with grave doubt. The etiological element suggested by Erichsen in his term spinal concussion, has been a great hindrance in the study of this subject, although views have been attributed to him that he never announced, such as a railway spine and other abominations. Readers seem to have overlooked the line on the title page of his monograph, "Je raconté, je ne juge pas." Many writers recognizing the fundamental error in the term spinal concussion, and the fact that there were often grave cerebral lesions associated with these conditions, have suggested other terms, such as traumatic neurasthenia, traumatic hysteria, traumatic neurosis, and lastly, in consonance with the term railway spine, we have the railway brain. Clevenger, recognizing the stumbling block in the term spinal concussion, has named this symptom complex Erichsen's disease, though it is not apparent exactly what advantage has been gained by the change. If we examine the symptomatology in Erichsen's disease we shall find it exceedingly complicated ; Clevenger, in his book, gives thirty-one more or less subjective phenomena associated with this disorder. He defines Erichsen's disease to be "a group of mainly subjective symptoms of a nervous and mental nature, sufficiently characteristic to enable it to be recognized as a traumatic neurosis, distinct from other traumatic neuroses with which it may or may not be associated. The most common cause of Erichsen's disease is a concussion of the spinal column, including its contents and nearest appendages."

According to this definition it ought to be possible for us to affirm, in a given case presenting the peculiar symptom grouping, that a person had sustained a trauma. But that is exactly what we are not able to do. There are cases presenting the peculiar symptom grouping of Erichsen's disease who

have never sustained any traumatism, and in whom, as we have observed in one case, this disorder existed from early childhood. It was accompanied by pain in the back, with restricted movements of the spine. Paræsthesiæ were present with exaggerated reflexes. The tapping of the tendons caused such a "shock" to the spine that the patient decided to discontinue the examination if this proceeding were again attempted. There were the tender spots along the spine with emotional depression and persistent insomnia. Now, according to Clevenger, "the foundation, frame and roof of Erichsen's disease is the back pain and rigidity, the insomnia and emotional disturbance." When these symptoms occur without traumatism, we do not call them Erichsen's disease, but spinal neurasthenia. Wherein lies the necessity of this new term? We all admit the necessity of terms covering certain symptom groups in which the pathology is obscure. In chorea we have a term that expresses a symptom group, in which we are still much in doubt as to whether it is of spinal or cerebral origin, and which has an etiology of wide range; but we do not divide up its terminology and call that form associated with rheumatism chorea, and another case, dependent upon fright by a dog, as the canine disease. Regarding spinal neurasthenia, Clevenger says that in this disorder there is fixation of the spine, disturbed sleep, pain on moving the back, emotionalism, etc. Let me say that our experience largely differs from Clevenger's, for we have frequently noted some or all of these symptoms in uncomplicated spinal neurasthenia.

In the chapter on electro-diagnosis, Clevenger tells us that the electric current affords an infallible means of converting many subjective into objective phenomena; though it is not quite apparent how this means will be of much value in establishing a symptom group having back pain, rigidity, insomnia and emotional disturbance for its foundation.

It is not claimed in this paper that Erichsen's disease has no existence; that is, that the symptoms of spinal concussion, as he terms it, are not actually present. They occur not only

in railroad cases, and other forms of traumatism, whether or not there is a possible suit for damages. In our experience we have seen as pure types of concussion cases occurring after falls down a pair of stairs or off a step-ladder as we have ever seen presented in a railroad case. Spinal concussion is not a litigation disease, and perfectly pure types are found where no possible litigation can intrude. What we do claim is that it is misleading in the study of these cases to set up a type of disease having a peculiar etiological factor (concussion) in which the symptoms do not differ from other disturbances unassociated with such causes.

There is no doubt but that most any disturbance of the functions of the cord may be set up by a traumatism. We may have lateral sclerosis, tabes, transverse myelitis, or meningitis, but these diseases do not lose their identity when caused by traumatism. Why, therefore, should symptoms of a purely functional character, having an origin in other than traumatism, be termed spinal neurasthenia, but the same set of symptoms be called spinal concussion or Erichsen's disease when preceded by trauma?

We feel that we can not urge this matter too strongly upon the attention of medical men. We believe that there is scarcely a single person within the sound of the reader's voice who has not been directly or indirectly connected with a suit at law, in which the chief ground for damages has been a spinal injury. As time passes this sort of litigation is becoming increasingly common, and the medico-legal relations of this class of injuries are assuming greater prominence every day. It is, therefore, increasingly important that we have better verbal definition in these cases, that we may present the merits or demerits or these cases properly before our courts of law.

In examining these cases, and in our own classifications, we have omitted the term spinal concussion altogether, and as standing for any pathological entity, and have proceeded with the examination of these cases solely with a view to

ascertaining the exact condition of the nervous system. They naturally divide themselves into injuries to the peripheral nerves, and functional and organic diseases of the spinal cord, brain and sympathetic. Of course we may have mixed cases, but it is usually possible to separate the symptoms and refer them to their proper seat. Peripheral nerve injuries are almost always accompanied by a loss of power in the muscles supplied by the nerve and in a loss of sensation in the skin to which it is distributed. The nerve may be completely paralyzed for a few days and regain its function in a comparatively short time. The blow on the nerve may set up an exceedingly slow inflammatory process in the nerve that may lead to atrophy of the muscles supplied by the nerve, or to wasting of an entire extremity by extension of the inflammatory process. As a rule, if no changes are apparent in the muscles of a part six months after an injury, we can exclude damage to the peripheral nerve. So far as we know, peripheral nerve trouble is always organic, the nerves having but the single office of conduction ; their functional disorders are practically nil.

Traumatisms of the spine are divisible into three great groups : those of a functional character, which may be generally named by the term spinal neurasthenia ; they are characterized by fixedness of the spinal segments, pain on pressure, and on motion, a subjective sense of weakness in the lower extremities. It is this form of spinal disturbance to which the term spinal concussion has been so frequently and so misleadingly applied. It may or may not be associated with some of the organic lesions of the cord which comprise the second group of spinal injuries, and which includes all of the systematic and unsystematized organic lesions to which the cord is liable. The third group includes injuries, such as strains of ligaments and muscles, as well as fractures of the bones composing the spinal column, and which may be followed by the varying symptoms of spondylitis.

We do not claim that the diagnostic differentiation here

attempted is easy in every case; in many it can only be made by time; frequently the pain will be followed months after injury by a deviation of the spinal segments, or organic changes in the cord will show themselves a long time after the primary injury. What we do claim, is that it is possible to make a thorough analysis of each case upon these lines within one year of the receipt of the injury, and that it is possible to formulate a prognosis that shall be approximately correct,—a thing that is impossible under the symptom grouping of Erichsen's disease, or spinal concussion.

The classification of head injury cases is the same that is followed in the spinal. We have first the functional, which includes the cerebral type of neurasthenia; then the group accompanied by mental changes; and thirdly, those which include the organic disturbances, such as hemorrhage, etc.; lastly, the class in which there is rupture of the membranes or fracture of the bones. Perhaps the frequency of a certain class, namely, the epileptics, would entitle them to separate mention.

We had hoped to present a summary of over one hundred cases of traumatisms of the nervous system, in support of the classification adopted in this paper, but we found that it would consume an unreasonable amount of time.

It is claimed that the classification here adopted will enable us to make an accurate estimate of the nature and extent of injuries that are now obscured by the misleading and objectionable terms spinal concussion, Erichsen's disease, and the traumatic neurosis.

CONSUMPTION PRIMARILY A NERVE DISEASE.

BY J. J. N. ANGEAR, B.S., M.A., M.D.

I have for years entertained the idea that the initial lesion or vice causing consumption is in the nervous system. In January, 1880, I read a paper bearing the title "Consumption a Nerve Disease," before the Iowa State Medical Society.

Causes of all diseases may be divided into internal and external. External causes arise from the patient's environments and are generally called exciting causes. Internal causes are congenital or hereditary defects or vice. This is generally termed predisposing causes. Primary cause here is meant some abnormal condition of the nervous system, which may arise from the patient's environment or heredity, and from this defect arises the anatomical lesion and the pathological vice producing the symptoms which we call phthisis pulmonalis.

We wish to emphasize the thought that the force of the external and internal causes are spent upon or aimed at the nervous system. At this particular time there may be no evidence or symptom of disease of any kind. Any one of the environmental factors may be actively operative and cause some other disease than consumption. Lying upon the damp ground may cause meningitis in one, myelitis in another, rheumatism in the third, inflammation of the lungs in the fourth, and consumption in the fifth. Because the environments may or may not cause consumption, it cannot be stated to be *the* cause.

The active internal cause depends upon the external, and if the patient can be excluded from the external cause, then the patient is shielded or exempted from the disease; hence both the predisposing and exciting causes are conditional, therefore I have seen fit to name the defect or lesion in the nervous system—which is always present and always antecedent and active in causing the symptoms—the primary cause of consumption. When the nervous system is thus affected, consumption and not some other disease is inevitable.

I am not going to deny the existence of the bacilli tuberculosis—that they can be cultivated and in some cases by injection the disease may be produced. I wish to show that there is something acting as a cause which antedates the introduction of the bacilli as a cause.

Since the discovery of the bacilli, too many of the profession have jumped at the conclusion that the bacilli are the prime and only cause of this. This conclusion has prevented the profession from investigating the matter as to the proper place the microbes occupy as a factor of the cause of phthisis. If these microörganisms are in the expired air of the consumptives and the atmosphere is thus contaminated, why, then, are not all of us affected?

Consumptive children are in our schools, consumptive persons are in our street cars, are on our boards of trade, in our public halls and in our churches. The sputa of consumptives are on the floors and in the spittoons of all our public places; therefore we must be breathing this contaminated air. Their sputa-soiled handkerchiefs and clothing are sent to our common laundries—with all this excessive exposure we have but one consumptive in 573 of the population of Chicago. Were this theory true, instead of wondering why so many persons die annually of phthisis, the real wonder is why so many live.

Measles and scarlet fever are said to be caused by microbes. It is an historic fact that on the Faroe Islands no

measles existed from 1781 to 1846, a period of 65 years, at the expiration of which time it was introduced by a single patient. Out of a population of 7,782, only 1,500 escaped the disease. Those who escaped were mostly over sixty-five years of age and had had it in childhood. The historian does not tell us how many of the 1,500 who escaped had had the measles in childhood. He says mostly—showing that there were but few who escaped having measles. Let us take the figures as they are, and they give us the fact that 80 per cent. of the population were smitten with this disease. Had it been scarlet fever or small-pox the result would have been the same.

Now if consumption is of the same microbic origin, in the city of Chicago, a population of 1,250,000, instead of having, as we had last year, 2,182 deaths from consumption, we should have had just 1,000,000 deaths. There would have been but a mere handful left to tell of the devastation of the wonderful World's Fair city. To say the least, this shakes our faith in the theory that the bacillus is the primary cause of consumption. This is not denying that the microbe may be a factor, but not the prime cause.

Since the introduction of the theory of the microbes causing phthisis, the profession have been spending their energy in trying to kill the bacilli, believing when that can be done the disease will be cured. Hence the intestines have been the battle ground, and the microbes have been bombarded with sulphuretted hydrogen.

Just call to mind the amount of paper and ink that has been wasted in extolling the wonderful discovery that has cured so many cases—and according to some of these wonderful reports it has cured all. Literally blowing up their patients and stinking out the inhabitants of the home. Where are all these cured patients? "Their stammering tongues lie silent in the grave." Where are those doctors and their stink pots? The microbes echo, where!

Then came the hot air fad. These pestiferous microbes

must now be burned up. The lung now becomes the battle ground. The manufacturers could not make the necessary furnaces fast enough to supply the demand. The zealous M. D. could be seen like the plumbers going along the streets with their furnaces; the one to solder and the other to roast. The plumber is the victor and now has the entire field to himself. Where are all those patent hot air furnaces? Where are the cured? Where the doctors? You, Diogenes-like, may light a candle and search Chicago without finding one. The cured patients have quietly folded their tents and stolen away—to the great hereafter.

Then came the grand idea of attacking the little but numerous demons with sodium and gold by means of the hypodermic syringe, and thus attack the microbes in the blood and other fluids of the body, and this too has been reported as a grand success, and yet Father Time had written on the historic page of 1892, in Chicago, 2,182 patients have died of consumption in spite of the little syringe loaded with sodium and gold.

The failure of all these well aimed (according to the theory) and thoroughly executed plans, should open the eyes of the profession, and at least shake their confidence in the theory that killing the bacilli tuberculosis is going to cure their consumptive patients.

Not breaking new ground in physiology nor pathology, but simply referring to well known principles, it will not be necessary to load down this paper with references to authorities. Many mathematical principles and historic facts are so well understood that referring to authorities would weaken rather than strengthen a paper, besides insulting the intelligence of the reader or listener.

Correlation of nervous diseases is well understood and accepted by the profession.

Wetting the bed in childhood may develop, as the child grows, into spermatorrhœa.

A hysterical woman may beget an epileptic or a choreic child.

An epileptic parent may beget an idiot, or a child that may become insane or consumptive.

A neurotic parent may beget a morally depraved child that may spend the major part of his life in jail, penitentiary, or die on the gallows. I have seen from a consumptive mother an epileptic daughter, a morally depraved son, and another daughter who died of consumption.

A large proportion of the insane die of pulmonary disease. Among these the insanity gets better as the phthisis gets worse, and *vice versa.*

Severe exposure is a fruitful cause of myelitis, meningitis, neuritis, as well as consumption.

Injuries, especially of the hands and feet, frequently produce tetanus. I have known them to cause phthisis.

These examples suffice to show what is meant by correlation of nervous diseases, and at the same time show that tuberculosis may be correlated with nervous diseases. This proves that there is an intimate relation between consumption and nervous diseases.

Nutrition is under the control of the nervous system, and the nerves whose function is to govern nutrition we call trophic nerves. Consumption is a wasting disease ; the body is not nourished and finally succumbs to destructive metamorphosis. The logical conclusion is that consumption is a disease of the trophic nerves.

Self-preservation is a fundamental law of nature, not simply in the animal as a whole, but in the tissues, and even down to the minutest cell of which the body is composed. Nature is able to resist a certain amount of destructive influences. The mechanic's hands become hard by honest labor, and thus resist a great amount of friction. That is not saying that a mechanic's hands cannot be blistered by friction and that slivers cannot penetrate them.

The blacksmith can handle hot iron—so hot that it would

burn others; yet blacksmiths may have burned hands. Men chew and smoke tobacco to a certain extent and live to a good old age, because they do not go beyond the limits of natural ability to resist these baneful influences. These men may step over the line and suffer from the effects of the nicotine.

Resistance or endurance is a known physical principle, and may be natural or acquired. The pigeon can take enormous quantities of opium. The hog will get fat upon arsenic. Some persons never have measles or scarlet fever. These are examples of natural resistance, while the taking alcohol, opium, tobacco, etc., are acquired.

Dr. Paget had worked for years upon the cadaver and paid no attention to cuts upon his fingers or scratches on his hands, because he had an acquired resistance to the virus, microbes, ptomaines, etc., but in later life he abandoned his work among the dead, and in after years he attempted a post-mortem and nearly lost his life; was very sick for a long time with blood poisoning. This shows that an acquired resistance may be lost.

Resistance is positive; susceptibility is negative. Destroy resistance and you establish susceptibility. A puerperal woman is susceptible to scarlet fever and erysipelas. The puerperal state has destroyed the resistance.

Nature furnishes scavengers in the form of flies, crows, vultures and jackals; the carnivorous animals to keep in check the too rapid increase of other animals which would overrun nature and thus bring a total destruction of all living things. The cats check the mice, the wolves keep down the rabbits, the hawks prevent the too rapid increase of the pigeons, the sparrow saves our shade trees by devouring the destructive worms.

The leucocytes do this work for us in our bodies. Your catgut ligatures are removed by the carnivorous leucocytes. A sliver in the flesh causes congestion, brings a whole army of leucocytes in the vicinity, and they loosen the sliver by

enlarging the cavity in which it is lodged. These faithful leucocytes as sentinels attack the microbes and eat them, and thus save us from the effect of the bacilli tuberculosis.

While the trophic nerves are normal, producing or recruiting and keeping up the ranks of these leucocytes, we are saved from consumption. The microbes are the rats while the leucocytes are the ferrets, and while the ferrets are healthy, vigorous and sufficiently numerous, we have a resistance to consumption.

While the nervous system is normal the blood-making process goes on, the various functions of the body are correctly performed. In this condition a person breathes the air from the lungs of a consumptive patient. The bacilli are few in number and the healthy person receiving the microbes has an active and vigorous army of leucocytes, and the battle is sharp but decisive. The leucocytes are the victors. Let us suppose a wife has been watching and caring for a consumptive husband for a long time, depressed mentally, anxiety wrought up to the highest pitch, there has been loss of sleep. Here is a chain of causes which will break down the nervous system enough to cause serious nervous and mental disease. There is a loss of appetite, impaired digestion and wasting of all the tissues. In this condition she is taking in the air which is loaded with the bacilli tuberculosis. The leucocytes are greatly reduced in numbers and strength. In the battle the bacilli are the victors. They multiply rapidly and reign supreme till the death of the patient.

There was a point in this patient's history had she been placed in an atmosphere destitute of the bacilli and before the resistance had been destroyed, when the nerve energy would have been recuperated, appetite, digestion and nutrition would have been restored and the patient might have been saved.

Confinement in prison causes great mental depression and worry, and this causes the majority of the inmates of prisons to die of consumption.

It is reported that two-thirds of the prisoners at Joliet have consumption, and nearly all the deaths that occur in that institution are of phthisis. Living in dark, damp houses will do the same.

If we ever expect to cure consumption we must do something more than fight microörganisms, which at best is but cutting off the tops of the Canada thistles and leaving the roots in the ground.

We are recognizing to-day the fact that the nervous system with its fibers going to every organ, every tissue and every cell in the body, governing and controlling every action and every function in the grand and wonderful structure of the human body, when it is attacked by disease digestion fails, absorption fails, assimilation fails, and the very citadel of life fails. The King of Terrors rides triumphant through all and over all.

OIL OF CASSIA AS AN ANTISEPTIC.

BY CARL E. BLACK, M.D., JACKSONVILLE, ILL.

Mr. President, Members of the Illinois State Medical Society and Ladies and Gentlemen:

I desire to call your attention briefly to the value of oil of cassia as an antiseptic and to point out advantages which it seems to possess over commonly used agents. In 1888 Dr. G. V. Black, of Jacksonville, Ill., made a long series of experiments to determine the relative value of various antiseptics in inhibiting or destroying the growth of certain well-known pathogenic micro-organisms.

The ordinary antiseptics were tested repeatedly until their value was fully determined. Various essential oils were tested in the same way. The results of this work were a little surprising. It was found that almost all the essential oils had a high range of value as antiseptics. Oil of cassia, which is ordinarily sold in our drug stores as oil of cinnamon, stood first in its power to destroy various cultures of micro-organisms.

The following comparison will show the relative strength of three drugs : Carbolic acid, 1 to 300 ; mercuric bichloride, 1 to 25,000 ; oil of cassia, 1 to 5,000. Each of the above solutions had practically the same effect on the cultures of germs. This shows oil of cassia to be more than fifteen times as active an antiseptic as carbolic acid and one-fifth as active as mercuric bichloride. Considering that the antiseptic value of mercuric bichloride is largely wasted in the presence of albumen, oil of cassia is practically as effective as the bichloride of mercury. These experiments have been repeated by a number of observers with confirmatory results.

Aside from its strength as a germ destroyer, oil of cassia has other qualities which recommend it for practical use. It can be prepared for use simply by putting the oil in water and shaking thoroughly. It is soluble in water about one part to five hundred which is stronger than would be ordinarily used. The solution made in this way is preferable to the process of making the ordinary cinnamon water of the pharmacopœia.

Experimentally the value of oil of cassia is beyond question and its simplicity of application makes it very desirable. A small bottle of the oil can be carried and a watery solution of desired strength can be made as required. It may be used as a powder by triturating with bismuth, corbonate of magnesia or boracic acid. The latter is the one which I have used most and found very satisfactory in its practical application, under all circumstances where an antiseptic powder is desired. In fact, it is about the only really valuable antiseptic powder of which I have any knowledge. Ointments of any desired strength can be made by rubbing up the oil with vaseline or cosmoline. Sterilized gauze moistened with a solution of oil of cassia makes a most effective and pleasant dressing. The odor of this drug is much more agreeable than that of some of the other agents in use, and in cases where a deodorizer is desired few drugs will be found more efficient than oil of cassia. Another very important point in favor of this oil is its diffusibility. It diffuses itself to every part of a cavity or part to which it is applied.

There is one combination with oil of cassia which is very valuable. It consists of one part of carbolic acid, two parts of oil of cassia and three parts of oil of wintergreen. The appearance and qualities of the compound are very different from those of any of the ingredients. It lacks the caustic character of the carbolic acid, and does not have the irritating qualities of oil of casia in other solutions of the came strength. It can be applied directly to a surface or wound with the best

results. It is much used in dental surgery where it is known as "the 1, 2, 3 mixture." (Dr. G. V. Black.)

During the past four years I have constantly used oil of cassia in various ways, in all cases where an antiseptic or germicide was required. A watery solution of oil of cassia has been the standard solution for purposes of antisepsis. For cleansing the hands previous to surgical or obstetrical procedures a water solution of oil of cassia has been used. The same solution has been used in surgical operations of all kinds from the most insignificant cases of minor surgery to the major operations. The practical results of an extended and varied use of oil of cassia as an antiseptic has confirmed the belief that it is one of our most valuable agents and that it has a wider range of value than any other antiseptic yet brought into use.

In a number of parasitic skin diseases in which it has been tried it has been found more efficient than any other agent. In tinea circinata and tinea sycosis, for example, the action of applications of oil of cassia is immediate and gives most gratifying results.

Oil of cassia has already been used by a number of surgeons, and this paper is presented with the hope that a larger number of surgeons and physicians, having their attention called to its uses, will give it a trial in order that its exact practical value may be established.

Some caution should be observed in the use of this drug. The solutions or other form of its application should not be too strong. Strong solutions are unnecessary and are liable to be irritating. A watery eruption peculiar to oil of cassia is produced by concentrated applications repeated several times. Blisters may be produced by applying the pure oil to the skin and covering it. Care should be taken that the applications of oil of cassia are not strong enough to be irritating. It is especially irritating about the eye and does not seem well adapted to eye cases.

THE SUPERIORITY OF STERILIZED COW'S MILK FOR INFANTS.

BY DR. CHAS. WARRINGTON EARLE, CHICAGO.

The question of feeding babies still continues to be the important one of the hour. In this generation important questions seem to multiply. Specialists in the different departments of medicine and surgery clamor and discuss the importance of the questions in their particular department—but quietly (in some instances at least), and without extraordinary heralding, the babies arrive and require something to eat. There is no cessation for the demands of these new inhabitants. Baby-feeding is then, I say, the question of the hour.

I cannot stop at this time to discuss the question as to why artificial foods must be prepared, or why some mothers cannot or do not nurse their children during the first year.

Of course, mother's milk comes first, when possible. This source of supply heads the list. The wet nurse is suggested secondly, although with the perfection to which artificial food has been brought when it is well sterilized, it is coming to be a question whether sterilized cow's milk, properly prepared, does not give us nearly as perfect food as the wet nurse, and does away with the perplexities and inconveniences of her presence.

Thirdly, I place a mixed diet; by that I mean part mother's milk and part sterilized food.

Fourthly, artificial food, strictly sterilized, with cow's milk as the basis.

I cannot proceed with the consideration of this subject

without saying a few words concerning the reasons given by some mothers, and concurred in by some doctors, in regard to depriving babies of mother's milk and placing them on an artificial diet. It is not an infrequent thing for me to find a baby living upon an artificial food, *improperly* prepared, when the mother is abundantly able to nurse the child. Upon inquiry I find, possibly, that this mother was not anxious to wean the baby. Upon the other hand, however, she may have expressed the desire to be relieved of the trouble and responsibility incident to nursing, and had asked the doctor if it would not be quite as well to wean the baby. Sometimes a reasonable excuse to her is present, and in some instances the physician is the first to suggest that the child should be weaned.

I think that advice of this kind should be very carefully considered. This is particularly true in large cities where the mortality during the summer is so great among the infants of the poorer class.

Another point I desire to briefly consider before I reach the main question, and it is the indifferent instructions given to many mothers by the doctors in regard to what shall be given in the way of an artificial food. The entire question is sometimes dismissed with the words, "Give the baby condensed milk," or "Give Mellin's Food," or "Nestle's Food," without a particle of instruction as to how it should be prepared. A little later on the food is found to be disagreeing with the baby. This condition is met by the doctor with the single remark, without any general instruction even, "Change the baby's food," and he leaves the house.

And now in regard to the different prepared foods to which our attention is constantly being directed. I have tried them all, and from time to time it has seemed to me that the ideal had been found.

I am more and more convinced at the present moment, however, that there is not a manufactured food that is rich enough to furnish the child with proper nutrition, unless it is

given in larger quantities or more frequently than the directions indicate.

We should constantly keep in mind, it seems to me, the composition of mother's milk. It is pretty difficult for us to better this combination. The amount of casein and the amount of butter fat which mother's milk contains are the things we should constantly remember, and whenever we direct an artificial food, our aim should be to furnish something containing these constituents in nearly the same per cent.

During the last eighteen months one of my particular studies has been to take to some of the laboratories specimens of food as I have found it in different houses prepared for the baby, and subject it to an analysis.

For instance, I go into a house where the baby is being artificially fed. Its nutrition does not come up to my standard. It is crying and fretful. The fontanelles are slightly depressed, the baby looks worried—it has commenced to fail. I am in the habit of taking a specimen of the food which it is receiving to the laboratory for analysis, and the result in many cases is perfectly surprising. I have been prepared to find that there was a lessened amount of nutritive material—prepared to find that the ingredients of the food were not properly combined ; but I was not prepared to find, as I have in almost all of these preparations, such a small amount of fat, so that the food should truthfully be called "A starvation diet."

How about some of these combinations? What do they contain? Cow's milk two parts, water one part, gives a little over 2½ per cent. of fat. Condensed milk one part, and water nine parts, gives less than 1½ per cent. fat. Nestle's food one part, and water ten parts, gives .17 per cent. butter fat—a most impoverished diet. Imperial grainum three parts, milk thirty-two parts, and water sixty-four parts, gives less than 1½ per cent. of butter fat. Mellin's food three parts, and of milk and water each forty-eight parts, gives 2 per

cent. butter fat. Carnrick's food three parts, water ninety-six parts, gives .15 per cent., while barley-water one part, and water two parts, gives over 2½ per cent. fat. Meig's mixture, cream 14 or 16 per cent., 2 oz. milk, 2 oz. lime water, 3 oz. *sugar water, gives 3½ per cent. fat. It will be noticed that none of these foods come up to the standard as regards fat, but we know that in many instances, given by careful mothers, they have furnished the proper nourishment. In all probability, however, either a larger amount of food is given, or the children are fed more frequently than directed.

With the following facts in our possession—

1st. That artificial food must be used.

2nd. That no one of the prepared foods possess sufficient nutrition to properly develop a baby.

3rd. That physicians as a rule are indifferent and indefinite in their instructions in regard to the preparation of even a poor food—we are in a position to consider a food that with care, comes nearly to the desired standard. We must keep constantly in mind the composition of mother's milk in order to build up a food which shall be so nearly similar that it will possess all of the constituents necessary to maintain the life and growth of the infant. We should remember that human milk contains from 3.67 to 4.30 per cent. of fat, and that cow's milk contains about 4½ per cent. Cow's milk is rich in the albuminoids, by which I mean casein and albumen, but poor in sugar. And finally, as a general proposition, we know that by adding sugar of milk and water, and a variable amount of cream to cow's milk, we have a food that is very nearly similar to human milk.

There are also a few facts which are indisputable. We can stand upon them as a kind of platform. It has been demonstrated time after time that mother's milk and cow's milk when first drawn are perfectly sterile as far as germs of fermentation and decomposition are concerned. Experiments and investigations have demonstrated this beyond any kind

* Sugar water—Milk sugar 17¾ dr., water one pint.

of doubt, and we had in the preparation of artificial food, even before we know why we did it, almost stumbled on to the great principal which underlies the process of sterilization, viz., of giving it directly from the udder of the animal as it has been done in France, or boiling it after it has been drawn any length of time. We perhaps did not know what this was doing for the artificial food, but we were imperfectly sterilizing it.

Cow's milk is subject to great contamination, and it is on account of this that such great and rapid changes are produced, and that fermentation and decomposition take place. Through the most laborious experiments and observations it has been shown that this process of decay and fermentation and souring is the result of the growth of myriads of bacteria —you may call them germs or microbes. These foreign elements obtain entrance into the cow's milk from a great number of sources; from the udder of the cow, from the hands of the milker, from pails and cans in which it is received and transported, by diluting with impure water, and from the manifold manipulations to which it is subjected before it is ready to be taken by the baby.

In my judgment the sterilization of cow's milk, or any other kind of food, which not only destroys the germs of fermentation, but also those of disease, marks an era in the lessening of infantile mortality and in preventive medicine unsurpassed. It is doing more to diminish the terrible mortality among children than any other one thing which has been brought to the notice of the profession during the last quarter of a century. I do not except either antiseptic surgery or obstetrics.

What is the Sterilizing Apparatus?—I will speak very briefly of four; Seibert, Arnold's, Whitehall & Tatum's and Soxhlet's. The Seibert has its cheapness to recommend it, but the bottles are made of poor glass and break easily. Upon each bottle is a groove showing the amount of milk to be placed in each bottle, and the words, "For a child from

six to eight pounds, or from fourteen to eighteen pounds, feed every two, three or four hours as the child is approaching the time when it needs feeding less frequently." These instructions are suggestive and important to young mothers, and very frequently when I have intended to have a better sterilizer after a time, have supplied a mother with a Seibert so that she may become accustomed to the amount of milk and water which should be used in preparing the food. Either Arnold's or Whitehall & Tatum's cost $2.50 and are of much better glass and are also provided with a tray or wire basket. Both are excellent sterilizers and I think the majority of families prefer to buy them on account of the extra furniture which comes with them. Soxhlet's apparatus costs $5.00. It is a good combination, but as far as I know has nothing to recommend it above the Arnold's or Whitehall & Tatum's. We may also extemporize a sterilizer. As soon as a mother fully understands the principle, ordinary bottles, perfectly clean, with absorbent cotton as stoppers fulfill every requirement. With one of these appliances and with the knowledge to use it so that the food is absolutely sterile and may be kept so for days, the question still comes up, what food shall we use?

What Shall We Sterilize?—Any food which is giving the child a good nourishment and only temporarily disagreeing with it on account of fermentation and decomposition, can be continued with the addition of the precaution that it shall be thoroughly sterilized. A food should not be changed if a baby has gradually gained flesh while taking it, simply to make a change. We can illy afford to experiment with babies' food, particularly during the hot season, and unless there is some good reason for changing, the child should be continued upon what has furnished a good and substantial nutriment up to within a few days. But if a change must be made, I am more and more convinced that cow's milk properly diluted and enriched, comes nearest to mother's milk, although we all know very well that some of the different

prepared foods nourish some children in a satisfactory degree. Cream properly sterilized is undoubtedly the best thing to increase the quality of the food and there is no doubt that when a diluent is to be employed, sterilized water, or rice water, or barley water, when there is a tendency to diarrhœa, or oatmeal water when there is a tendency to constipation, are the fluids best indicated. With sterilized cow's milk, cream of known richness, pure sugar of milk and a diluent which diminishes the coagubility of the albuminoids, we are in a position to build up a baby food that will come pretty nearly to the standard of mothers' milk.

Objections to the Sterilization of Food.—Since the attention of those most interested has been directed to the sterilization of food, a fear has arisen in the minds of some that by the process which is necessary to kill certain bacteria, we lessen the nutritive power of the food we are preparing. There is undoubtedly ground for their fears, for at this time several investigators have placed themselves on record in regard to the deterioration produced. It seems that we had been sterilizing the food at too high a temperature; our instructions to mothers had been to boil the food, which meant a temperature at least 212 degrees, and in many cases higher. By this process undoubtedly certain nutritive constituents were destroyed. Some of the liquifying and digestive ferments were coagulated; the casein was rendered less coagulable, and the fat globules were rendered less assimilable; and finally milk sugar by prolonged heating is completely destroyed.

It has been found by a greater experience and more extensive observation that preparing the food at a temperature of about 175 degrees, not only destroys the germs which may be in the milk, but several disease producing bacilli, and does not diminish or destroy the nutritious constituents of the milk.

Results.—The following cases have quite recently come under my observation:

Isabella W., aged four and a half months. I found her taking Nestle's Food, prepared according to directions, excepting that she was taking *more* food than was designated and was also fed *more frequently*. But notwithstanding this the fontanelles were depressed, she looked worried, the muscles were flabby, and she was commencing to lose flesh. The child was placed at once upon sterilized cow's milk, and in five days had gained one and a half pounds.

Baby L., aged eleven months. This child had gained nothing during the last five weeks, but had cried nearly all the time; seems to be hungry, and is satisfied with nothing. At first this baby nursed its mother, but later, condensed milk was ordered, which was the food when I was called. The child at this time weighed about seven and a half pounds. It was put upon sterilized cow's milk, and in two months weighed fourteen pounds. In two and a half months from being a poor, insignificant, badly nourished child, it became fat, jolly and happy.

Baby J., aged five months. Fed on condensed milk, and is failing in its nutrition every day. The bowels were loose, and vomiting occurred very frequently. Its food had been condensed milk one part, water fourteen parts, and prepared according to directions. It was placed on sterilized cow's milk and regained its flesh rapidly, gaining a little each week.

Baby B., aged six weeks. The mother of this infant died a short time after its birth, and it had been fed indifferently and without any definite instructions. It was sleeping poorly, and its nutrition had commenced to very markedly fail. It gained one and an eighth pounds in two weeks on properly prepared cow's milk.

The following is the experience of many parents, and is given exactly as it was written to me: "In reply to your inquiry as to how the baby is doing, I have this to say:

"First. The baby's weight when born was estimated at nine pounds and for the first month it had nothing but nature's

food, which proved insufficient in quantity and quality, as he lost in weight and was quite fretful.

"Second. About thirty days after his birth we purchased at your request a sterilizer and began feeding him regularly on sterilized food, consisting of about one part cow's milk and two parts oatmeal water; the diluent at times being changed to rice water, or to clear water, as the condition of his bowels seemed to require.

"Third. The milk in the food has been gradually increased until it is now two-thirds milk and one-third water.

"Fourth. He has continued to thrive from the time he was given artificial food, has had no sickness, has grown, I believe, remarkably strong, and weighed when three months old fifteen and one-half pounds."

I cite one more case. It shows that some dairymen's milk contain a satisfactory amount of fat—indeed, I think it usually preferable to one cow's milk unless we have her feeding and care immediately under our control.

E. C. L. weighed six and a half pounds at his birth. During the first two or three weeks of his life the mother tried to nurse him, but found this was insufficient. He was now given a mixture of milk and cracker water, which distressed him greatly. At three weeks of age he weighed seven pounds and he was now given milk from *one cow* one-half and sterilized water one-half. He did not increase on this food and was restless and pale. He was now given dairyman's milk properly sterilized, gradually increasing the milk until he was five months of age, when the diluent was discontinued and his gain was as follows: At 2 months, 12 lbs.; at 3 months, 14 lbs.; at 4 months, 17 lbs.; at 5 months, 22 lbs.; at 6 months, 27 lbs.

The following is an analysis of the milk as it was received from the dairyman:

Water, 82.48; solids, 17.52; fat, 8.58; albuminoids, 4.10; sugar and salt, 4.84.

I think then we may come to the following conclusions:

First. Mother's milk.

Second. A wet nurse, although if the call for artificial food is demanded late in the season, I would advise sterilized food.

Third. Mixed diet—the mother's milk for days of sickness, the sterilized food to make up the deficiency.

Fourth. A strictly artificial food thoroughly sterilized, using cow's milk as the base and pure water, rice or barley or oatmeal water as the deluent, adding cream and sugar of milk to bring up the quality.

Fifth. Feed the babies according to weight, not age.

Sixth. Babies should be weighed each week and their nutrition judged in this manner rather than by conjecture.

INSANITY IN ITS RELATIONSHIP TO LIFE INSURANCE.

BY FRANK PARSONS NORBURY, M.D., JACKSONVILLE.

The duties of an examiner for a life insurance company are peculiarly delicate and important, requiring an exercise of position directly opposite to that which he professionally occupies in his relationship to his patients. "In the latter case the patient exposes his infirmities and even intensifies them; the applicant for life insurance, on the other hand, may desire to lessen their importance or conceal their existence." The medical examiner is, therefore, a dual guardian; first, caring for the interests of the company by whom he is employed; second, watching the interests of the applicant.

Hurried or superficial examination jeopardizes, and causes unjust discrimination, destined to impair the efficiency and usefulness of the one, and compromising the welfare of the other. In justice to both, it is important that the examination be thorough, scientific and exacting. The detail for an examination, as ordinarily required by leading companies, embraces such as is included in regular medical diagnosis, following in the line of recent methods, outlined by such authorities as Da Costa, Loomis or Vierordt. A glance at the medical examiner's part in the contract of a life insurance policy will reveal his importance and emphasize the necessity of thoroughness in the routine of ordinary medical diagnosis, upon which rests the value of the risk assumed by the company. Such ordinary examination is sufficient in the greater majority of cases to enable discrimination to be made as to

the value of the risk, but it is nevertheless true that even in such cases special inquiry into special diseases will oftentimes reverse the standing of the case, and revert it to the rank of questionable risks. Hence, the importance of thoroughness in all risks, covering diseases more or less dormant, quiescent or seemingly of little consequence.

There is no class of diseases deserving of such special inquiry, more important alike to the company and the applicant, than nervous and mental diseases. For from their very nature they are elusive and require patience to elicit symptoms leading up to a matured diagnosis.

As Walton says, "Opportunities are frequently offered for brilliant and rapid diagnosis, but these opportunities constitute, however, but a small proportion of the sum total" of cases coming under observation. The examination, as required by the company, is so superficial, that oftentimes, and covered by one question, are embraced other diseases, all of equal importance, but treated as if they were mere passing inquiries needed to fill up space, supers as it were, when in reality they oftentimes assume leading roles, and play their parts with a vehemence surprising to all concerned. As instance, I have observed among the causes of death of policy holders, but a few months insured, general paralysis of the insane, other forms of organic brain disease, such as syphilitic brain disease, insanity following traumatism received before the policy was taken out, etc., and insanity following the morphine habit. As instances receiving benefits from fraternal societies, I have noted insanity, spinal cord disease, etc., all cases occurring within a comparative short time after being admitted into fellowship.

It is well for these individuals that they had such loyal brothers, but as such organizations are supposed to discriminate in favor of sound, healthy men, it is but another evidence of the laxity of examinations, and where minor parts sooner or later become title roles. The medical examiner is

not altogether to blame for his oversight in mental diseases, for his instruction regarding the subject of insanity is at fault.

But little if any attention was ever paid to instruction in insanity by medical colleges until recent years, and even now it is not required in many colleges as fitness for graduation. Andrews, the efficient superintendent of the Buffalo State Hospital for Insane, and president of the New York State Medical Association, in his annual address, says: "Many students never heard the disease (insanity) mentioned by instructors or found it treated of, in any intelligent way, in text-books of practice. The value of this knowledge," says he, "to the general practitioner can hardly be overestimated. He is called upon to make the diagnosis and to express his opinion as to the needs of his patients suffering from mental disturbance. Without instruction he is helpless and proves but a broken reed to the family, when he should be the firm support." I would add that he is not a fit person to take upon himself the responsibility of life insurance examination in the minority of cases, demanding as they do, special inquiry into the mental state of an individual.

Is it to be wondered at that an individual, the victim of general paralysis, who in the early stages of the disease decides to take life insurance, should successfully pass an examination and within a year or two die in an insane hospital? Or that syphilitic brain disease be mistaken for one of its symptoms, viz., impaired vision, treated accordingly and then recommended as a good risk, and within a year be confined in an insane hospital, hopelessly insane? It is evident, therefore, that insanity to be recognized must be studied. Again inquiry into the hereditary factor, which is given, apparently, a prominent place in an insurance examination, is so grossly superficial in its bearings upon insanity and nervous disturbances, as to bar it out of real prominence and value in the assumption of a risk.

Many of the questions pertaining thereto are capable of being evasively answered, and as a consequence no serious

value can be attached to the answers returned. All who have had experience in the treatment of insanity know how difficult it is to get correct family history necessary for a proper record of the cases under treatment. How that, when the friends or relatives of the patient are confronted with marked evidences of hereditary degeneracy, they deny such a possibility as hereditary influences in the case.

In life insurance examination where such evidences are not noticed, how often are such answers taken as "law and gospel," and in the haste to get through, the risk is recorded as good.

I have no statistics at my command, showing how many insured die of mental disease, for these valuable statistics are locked in the sacred confines of the companies' offices, and the contribution which could be made to the study of heredity, by such statistics, thereby lost to the scientific world. My experience, however, justifies me in saying, that a painstaking research would show it is beyond our expectation, and that the companies would find it to their financial interest, to insist upon a thorough examination into the special nervous and mental make-up of all applicants. So much in favor of the companies. Now the applicant has interests equally if not more important.

He it is, looking out for the welfare of his loved ones, turns to life insurance as a means to "keep the wolf from the door," should he be taken away. As the bread-winner of the household, he is in duty bound and compelled by all the ties of love to take life insurance if he can. The medical examination is the gateway to this desired end, and it therefore means much to the applicant. In the examination pertaining to mental and nervous diseases we are confronted with a problem of great importance to the applicant, if perchance we find in his antecedent history the existence of insanity or other grave neuroses. We must not infer that because such history exists, the patient is a bad risk, but let us closely scrutinize this history, elicit in detail the appearance, form

and result of such neuroses; find if there are inherent degenerate tendencies manifested in the applicant or his nearest of kin; take a broad survey of conditions out of which must grow mental disease, and then form our opinion. The law of heredity, we must remember, is the tendency of species to revert to the normal type. The elimination of false quantities may have ended before our applicant came on the scene, and he be on the ascending plane of development and therefore not a questionable risk.

Again presuming the applicant had been insane, are we to infer that he is not insurable? Not necessarily so, for there are forms of insanity as much a recoverable disease as typhoid fever and other self-limited and grave diseases. The brain stands upon an equal footing with the other organs of the body, so far as it can be diseased and recover its stability, without being diseased again.

The records of insane hospitals show this plainly and therefore when there are no predisposing inherent conditions, no acquired diathetic tendencies, which will render the risk questionable, it is not justifiable to reject a risk simply because of having passed through an attack of mental disease. I am aware that it will require probably special inquiry to ascertain the status of the case. Even so, I say, the individual is entitled to it and should have it. Many men, capable, honest and deserving, possessing such a history, are rejected, and with great injustice, because of the lack of thoroughness in the examination.

Once insane is not always insane. An individual once rejected by an insurance company carries the brand with him and is ever afterwards barred out from having his wrongs righted; his wrongs occasioned by the laxity of examination will be the scarlet letter to warn other companies of his infirmities which, indeed, are not infirmities but misfortunes. You all know of such cases.

Insanity, therefore, from this standpoint has a relationship to life insurance which is deserving of more than a passing

inquiry, and demands justice at least from the hands of the examiner.

Another important question which is ever before life insurance companies, is that of suicide, which is preëminently to be considered in its relationship to life insurance. Some companies take the stand that suicide is an evidence of insanity and do not make it a condition in the contract; on the other hand many companies, and particularly those of smaller calibre, say that suicide, *sane or insane*, renders the policy void and the company thereby escapes payment.

Suicide, sane or insane, seems to us falacious and unscientific; suicide means insanity and if a person dies by his own hand his mind is diseased; if diseased, his policy should be paid.

Suicide is considered by these companies superficially and not as Morselli has pointed out, as a working scientific law and part of the evolution of civilized people. Nature grants to the weak but a small part of the rights which are said to be conceded to all living beings. She protects the strong, the skillful, the subtle, whilst she leaves the badly formed, the anomalous, the poor in force and skill to fall victims in the struggle. This inequality, the co-existence of the conquered and conquerors, which to all appearances is scientific negation of some Utopian form of socialism, based upon the complete inequality of men, shows that a continued elimination takes place of inferior organisms and of weak characters from the bosom of human society.

The weapon of which man makes use in his struggle is the brain, and the first evidences of defeat are felt upon this organ, which fails, its faculties succumbing by disease brought on by this mighty struggle. Insanity is but the natural termination of the means nature uses to remove defects of species. The defeat is final, and suicide, dependent as it is on natural causes, is but the means toward an end of preservation of the normal type.

Suicide is then an evidence of disease, and as such is as much entitled to consideration from the hands of an insurance company as death from any other natural cause. We cannot help but regard the companies as failing in their comprehension of disease in declaring a policy void, when death occurs from suicide. An analytical study of suicide would show that it is scientifically an evidence of disease.

APPENDICITIS.

BY ELBERT WING, M.D., CHICAGO.

The main object of this paper is to introduce the subject of which it treats for discussion by members of the society. Incidentally an interesting case is reported, and a very condensed summary is presented of the most valuable recent periodical literature. Little attention is given to the question of diagnosis, because in most cases that is easy enough. More attention is given to classification and to the question as to what cases are suitable for surgical treatment, because these points are first, not fully settled, and second, are relatively of the greatest importance. If, as I believe, many cases of this disease have proven, and many will yet prove fatal through lack of timely surgical interference, the subject is worthy of the attention of this society to-day.

The case reported is as follows: J. H. H., Oct. 2, about 25 years, not married, employed in a dry goods store, had frequent occasion to lift heavy packages. This attack began at 5 A. M., Dec. 9, 1892, with sharp colic, pain most severe in the right inguinal region. At noon of the same day there was occasional severe pain in this region. Pulse 84, temperature 98.4 F. Patient is markedly dull and apathetic; his expression is hollow-eyed and worn. He lies upon his right side with thighs partly flexed upon the abdomen. General hyperæsthesia is extreme. There is a moderate amount of gas in the intestines, some pain generally over the abdomen on palpation which is most severe in the right iliac region, but not great even there. The result of palpation and percussion are otherwise negative. The patient thinks the

attack one of simple colic, which he has had before. Morphia and atropia were given hypodermically and dry heat applied. At 5 P. M. pulse 90, temperature 98.4 ; no change in physical signs. At 5 A. M., Dec. 10th (second day), he had a severe chill, and at 9 A. M. pulse 156, temperature 103, and he complained of very severe pain generally over the chest, but had no spontaneous abdominal pain. Examination of chest revealed no abnormal signs, and only moderate pain on pressure in right iliac region. Patient was sweating and hands and feet were warm. Ten drop doses of tincture of digitalis every four hours were ordered, and hot dry heat to the chest. At 12 noon pulse 120, temperature 100.5, no pain about chest, and abdomen unchanged except that at a point about two and one-half inches from the anterior superior spine of the right ilium and toward the umbilicus very slight pressure gave very sharp pain. At 6 P. M. pulse 108, temperature 99.5, slight occipital headache, marked general hyperæsthesia and apathy. Physical signs unchanged. At 10 P. M. pulse 156, temperature 99.5 ; pulse very feeble, hands cold and cyanotic, feet warm, general surface of the skin moist. Surface warm where covered, and hands became normal if under the bed clothes. Face and ears cyanotic, and on each side of the nose, symmetrically situated, there was a very markedly cyanotic band, with well defined borders, which extended from the bridge of the nose downward to the corner of mouth, and outward one-third of the distance to the ear. These cyanotic bands were strikingly visible across the room. A free stool occurred at 7 P. M.

Because the neurotic element has been so prominent in the case from the invasion, and because the surface was warm when covered, and the physical signs were as detailed, I did not think the patient in collapse from perforation or from intestinal obstruction.

At 8 A. M., Dec. 11 (third day), pulse 126, temperature 99, and the pulse at times irregular in both rhythm and force ; hands, face and ears cyanotic (parts of surface uncovered),

and feet and rest of the skin warm. The condition of the abdomen was unchanged, except that the tenderness at the McBurney spot was exquisite—the lightest touch giving acute pain—and similar but less acute tenderness extended along a line close to and parallel with the crest of the right ilium for about six inches. Since last night the bowels have moved twice. At 11 A. M. Dr. L. L. McArthur saw the case in consultation, and made a provisional diagnosis of septic peritonitis following rupture of an abscess. He returned at 3 P. M. prepared to operate. The only change in the case was increased tenderness along the line parallel with the ilium already mentioned, and the point of greatest tenderness moved from McBurney's spot to one just anterior to the right kidney. Dr. McArthur now said that the case was either septic peritonitis, appendicitis or other limited peritonitis, and he could not say which. The operation revealed an appendix vermiformis 6 centimetres long, in an intense inflammation, and with several gangrenous areas, some of these just ready to rupture. There was no other peritonitis. The patient made a protracted and eventful recovery and is now well. It may serve the purposes of this paper to say that the eventful nature of the convalescence was not directly related to the appendicitis, and that since his recovery the patient has said that he never had a similar attack before. The points of special importance in this case are, (1) the early appearance and constant presence of the "McBurney point," and the extension of the area of tenderness upward and backward away from the seat of the inflammation, this latter not being explained by the findings at the operation ; (2) the rapid development of the gangrenous stage of the inflammation ; (3) a delay of a few hours might have proved fatal.

Since Dr. McBurney's paper on appendicitis was read before the New York Academy of Medicine last fall, there have been a great many contributions in this country in the medical journals. Among those which have arrested the attention of the writer, the following have seemed to him of

special value, viz.: (1) One by W. H. Hodgman in The New York Medical Journal of Oct. 8, 1892; (2) two by Robt. T. Morris, one in the Medical Record of Jan. 14, 1893, and The New York Medical Journal of May 6, 1893; (3) one by Wm. T. Bull in the Medical Record of March 18, 1893; (4) one by J. D. Sullivan in The New York Medical Journal of April 15, 1893. The material for the rest of this paper is very largely and freely drawn from these papers.

The following clinical classification is suggested as one convenient for discussion, as well as for practical work: 1. Acute and at times suppurative or gangrenous appendicitis. 2. Recurrent appendicitis. 3. Chronic relapsing appendicitis.

The first class needs no explanation. In the second are placed those cases in which the attack is of moderate severity, apparently of a catarrhal—non-suppurating—nature, and in which, so far as symptoms go, there is complete recovery in the intervals of freedom. Dr. Bull gives the credit of devising the term chronic relapsing appendicitis to Talamon, and in this category places his own twelve cases operated on in the quiescent period, with one death. Of these cases he says (Medical Record, March 18, 1893): "All of these patients were in other respects in good health." All gave a history either of a distinctly palpable tumor, "or of continuous discomfort, or pain on exertion, with or without irregular action of the bowels." "The duration of the disease has extended over a period of from one to ten years, covering a number of attacks from two to twenty or thirty." In recurring appendicitis "the attacks recur at long or irregular intervals and are followed by periods of good health. Each attack is an independent affection. While it undoubtedly predisposes to a recurrence, that event may never occur." "Several attacks of recurrent appendicitis often induce the other condition of chronic inflammation with relapse. In fact one attack may do this." "In chronic relapsing appendicitis there is no return to absolute good health. There are always such evi-

dences of disease of the appendix, as local pain or discomfort, increased on exertion, tenderness, tumor; and to these are added frequent exacerbations of acute inflammation."

Dr. Bull raises the question as to whether we can "draw any conclusions from the history, or the physical examination, as to the condition of the appendix?" Twelve drawings accompany the paper, which show the position, and roughly the condition of the appendix, and a tabulated statement of conditions found is also given. He thinks that the following conclusions are warranted:

(1) "A history of frequently repeated light attacks, with discomfort in the intervals, indicates chronic inflammation of the appendix with stenosis of its lumen by bending or adhesions, or both." (2) The shorter the duration of the attacks, the less dense and resisting are the adhesions. (3) Severe attacks with appreciable "tumor," followed by slow convalescence, and recurring after brief intervals, "point to an appendix deeply buried in false membrane, or closely adherent to adjoining intestine or parietes," (4) "and a small abscess is more likely to be encountered without there being tenderness or elevation of temperature." (5) "A superficial tumor, or one adherent to the abdominal wall, is probably made up of omentum containing the appendix, and possibly adherent to the cæcum as well." (6) "With a tumor deeply seated in the iliac fossa, one is more likely to find the cæcum adherent to the parietes posteriorly, and the appendix behind it, or curled up in the adhesions."

Opinions differ as to whether recurrent attacks are more fatal than primary ones. Dr. Draper thinks the latter, while Price—quoted by Bull—in the Buffalo Medical and Surgical Journal of December, 1891, says: "Of thirty cases of acute perforative appendicitis, where recurrence was noted, twenty-two cases exploded into abscesses or general peritonitis before the third attack." Bull concludes from his cases that "there was sufficient deposit of plastic material about the appendix to make a suppurating process which might develop

in a subsequent attack, a local one; that the peritonitis, even if suppurative, might not threaten life unless allowed to go unmolested for a period longer than that now usually considered safe." He adds, "If we look at the clinical evidence as to the character of the attacks, we may say that the great majority were not severe nor threatening."

Perhaps the most important question which arises is when to operate. In this connection great stress must be laid upon McBurney's claim, that each case has its own peculiar characteristics and must be managed upon general and not specific principles.

This question arises in two classes of cases, those in which the appendicitis is active, and those in which it is in a quiescent state. The first includes all primary and recurrent cases, and the second those classed in this paper as chronic relapsing cases. McBurney says that "a sudden accession of pain in the right iliac region, accompanied by a rise in pulse and temperature, occurring during a course of seemingly mild appendicitis, is *generally* the time in a large class of cases," (quoted by Hodgman, N. Y. Med. Jour., Oct. 8, 1892). Morris goes much further, and a few of his "apendicitis aphorisms" may be quoted to show his position. He says: "The appendix vermiformis should be removed as soon as a diagnosis of appendicitis is made, because no one can tell just at what moment necrosis is going to follow the disturbance of circulation. It matters not whether the swelling which cuts off the circulation of the appendix is caused by the usual catarrhal process, or by fæcal accumulations or by foreign bodies. The mucous tube cannot swell readily within its inelastic sheath, so it chokes itself to death, at any hour in the course of any attack. The operation should be done in any stage of the disease in which the surgeon finds the patient, because the surgeon's methods are certain and safe, and nature's methods are uncertain and risky—speaking by comparison. In patients who have had recurring appendicitis the appendix should be removed, even if there have been no

recent attacks, because trouble may come when the patient is on the ocean or in the woods, away from skilled surgical help." (Medical Record, Jan. 14, 1893). In a later communication (N. Y. Med. Jour., May 6, 1893), he adds that the appendix should be removed as soon as the diagnosis is made because "we never can tell when or where perforation will occur, and we never know whether the products of inflammation are going to kill or not. The reason why the appendix should be removed between attacks in recurrent cases is because the death rate ought not to be above one per centum at such times, and the mortality rate must be much higher where we are dealing with perforations and large septic abscesses."

After a careful summary of the dangers and difficulties of operations, in attacks, and during the quiescent state, Bull (Med. Record, Mch. 18, 1893), remarks, that with a few exceptions such as the coexistence of other illness he "is in accord with those who believe that patients are in more danger from the continuance of the disease than from the operation performed in the quiescent period."

While a complete description of the surgical details of the operation would come with bad grace from one who never performs the operation, I beg to direct attention to four points in its technique in regard to which there is an increasing unanimity on the part of those who do.

The first of these is the so-called Trendelenberg's position, the elevation of the hips. The chief advantages claimed are, that the operator may work by sight as well as feeling, and that the intestines are much more easily kept away from the field of the operation.

The second point is that in cases in which the appendix does not lie near the median line of the abdomen, the oblique incision is better than the perpendicular one, outside of the rectus muscle. These points are strongly insisted upon by those who have tried them most thoroughly.

The third point concerns the treatment of the stump of the appendix. By common agreement it must be buried under folds of the cæcum. Bull ligates about one quarter of an inch from the cæcum with double ligature, cuts between them, draws out the mucous coat from the stump, ligates it and pushes it into the cæcum, and then closes the remaining serous stump under folds of the wall of the cæcum, secured with Lembert sutures.

Morris, after preliminary ligature of all coats close to the base of the appendix, cuts through its two outer coats, draws out the mucous coat, ligates it as near the mucous coat of the cæcum as possible, and cuts it off close to the ligature. He then buries the serous stump under folds of the wall of the cæcum, first scarifying their edges. He says that if the stump were not buried, "it would be the weakest part of the intestine after repair was complete. A sort of Eskimo window would be left, through which the intestinal microbes could peer out into the peritoneal cavity."

The fourth point concerns the closure of the incision in the abdominal wall. A plea is made for separate sutures for each of the three principal layers, and the importance of this method is strongly insisted upon. The accompanying table is taken from Dr. Bull's article, and to it, the case reported in this paper, and that reported in the Medical Record of May 13, 1893, p. 595, in which Dr. F. P. Kinnicut is the patient and the operator's name is not mentioned, are added.

With these additions the table gives eighty-two operations with two deaths.

LITERATURE.

SURGEON.	NO. OF CASES.	REFERENCES.
Treves	2	Lancet, 1891, vol. 1, p. 227; *ibid* 1888, vol. 1, p. 322.
Schede	4	Deutsche Med. Wochensch. 1892, p. 521.
Wyeth.....	2	Int'l Jour. of Surg., 1890, p. 104; *ibid* 1892, Aug.
Homans.....	2	Boston Med. & Surg. Jour., 1892, July.
Jalaguier	1	Bul. et méin de la Soc. de Chir., 1892, p. 349.
Monroe	1	Boston Med & Surg. Jour., 1892, p. 653.
Sutton	2	Brit. Med. Jour., Feb. 21, 1891, p. 409, Trans. London Clin. Soc., vol. xxiv.

LITERATURE.—Continued.

SURGEON.	NO. OF CASES.	REFERENCES.
Rogers	1	Memphis Jour. Med. Sci., vol. viii., p. 329.
Kaemmerer	1	Arch. für Klin. Chir., Bd. 43, p. 296.
Kümmel	7	Arch. für Klin. Chir., Bd. 43, p. 477.
Mayo Robson	1	Lancet, Feb. 13, 1892.
Jessup	1	Brit. Med. Jour., April 19, 1892.
Lange	2	N. Y. Med. Monatshefte, 1891.
Mayland	1	Lancet, 1891, vol. ii, p. 13.
Cabot	1	Boston Med & Surg. Jour., vol. cxxiv, p. 57.
Holmes	1	Lancet, 1888, vol. 1, p. 322.
Armstrong	1	Montreal Med. Jour., vol. xix, p. 261.
Joersen	2	Deutsche Med. Woch., 1891, p. 425.
Porter	2	Treas. Am. Surg. Ass'n, 1890, Boston Med. & Surg. Jour., April 2, 1891.
Elliot	1	Am. Jour. Med. Sci., vol. ci, p. 556.
Huntington	1	Occid'l Med. Times, 1891, p. 602.
Murray	1	N. Y. Med. Jour., May 24, 1890.
Monks	1	Boston Med. & Surg. Jour., June 5, 1890.
Roux	8	Bull. et méin de la Soc. de Chir., 1892, p. 400 (Note by Quénu).
Quenu	1	*Ibid.*
McBurney	4	N. Y. Med. Rec., April 16, 1892; N. Y. Med. Jour., vol. lii, p.329, and Dec. 21, 1889.
Hadra	1	N. Y. Med. Rec., March 8, 1890.
Tait	3	Brit. Med. Jour., 1889, p. 763.
Senn	1	Jour. Am. Med. Ass'n, Nov. 2, 1889.
Hoegh	1	Jour. Am. Med. Ass'n, Nov. 2, 1889.
Bridge	1	Med. News, May 24, 1890.
Stimson	2	N. Y. Med. Jour., vol. lii, p. 451.
Smith	1	Lancet, May 3, 1890.
Hume	1	Brit. Med. Jour., April 11, 1891, p. 803.
Gerster	1	N. Y. Med. Jour., 1892, vol. lvi, p. 216.
Bull	12	N. Y. Med. Rec., March 18, 1893.
McArthur	1	This communication.
———	1	N. Y. Med. Rec., May 13, 1893, p. 695.
Sullivan	3	N. Y. Med. Jour., April 15, 1893.
Hodgman	1	N. Y. Med. Jour., Oct. 8, 1892.
Total	82	80 recoveries, 2 deaths.

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